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James W. McGuire is Professor in the Department of Government at Wesleyan University. E-mail: jmcguire@wesleyan.edu.

Comments should be addressed by email to the author.

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Abstract

This paper explores whether political factors were associated with health outcomes across Argentina's 23 provinces and Federal Capital from 1983 to 2005, controlling for national trends, per capita economic output, and other provincial specificities. The introduction of a gender quota for the lower house of the provincial legislature is found to have a statistically significant and substantively strong association with lower infant mortality. Most other political factors are found to be unassociated with the health share of provincial spending, attendance at birth by trained personnel, or infant survival. This lack of association stands in contrast to the findings of the cross-national literature, in which political factors are often found to be associated with health care spending, health service utilization, and health status. Differences in level of analysis (national vs. subnational) and in statistical technique help to explain these contrasting findings. Still, the analysis suggests that relations between political factors and health outcomes may be weaker than is sometimes suggested. As Amartya Sen has noted, democratic freedoms (and other political factors) create opportunities to improve other dimensions of human development. Whether these opportunities are seized depends on the actions of citizens and governments.

Keywords: human development, democracy, mortality, health care, gender, subnational, Argentina.

JEL Classification: O15, N46, I12, I18, J16, H51, O54

1. Introduction

This research paper for the Human Development Report 2010 explores whether political factors were associated systematically with health outcomes across Argentina's 23 provinces and Federal Capital from 1983 to 2005, controlling for national trends, per capita economic output, and other provincial specificities.[1] In the human development perspective both political factors (e.g., political freedoms) and health outcomes (e.g., a long and healthy life) are viewed as intrinsic to the capability to lead a life that one values. Researchers working from a human development perspective are interested, however, not only in the relation of the various dimensions of human development to the flourishing of human capabilities, but also in the causal and functional relations among these dimensions. One manifestation of this interest is ongoing research on how the various aspects of human development (or deprivation) might be combined into a single index.[2] Another involves studies that explore associations among the distinct dimensions of human development, including political factors and health outcomes. Empirical research on such associations has hitherto taken place mostly at the household or cross-national level. It will be argued here that comparisons among subnational geographical units (provinces, counties, etc.) can also do much to advance the understanding of associations among dimensions of human development. Exploiting this underutilized level of analysis, this paper embeds a review of the quantitative cross-national literature on associations between political factors and health outcomes within an original analysis of such associations across the 24 provinces of Argentina in the quarter century that followed the transition from authoritarian rule in 1983.[3]

[1] These 24 primary subnational units will henceforth be called provinces.
[2] Alkire and Santos 2010; Anand and Sen 1994; Fukuda-Parr and Shiva Kumar eds. 2005: Section 2.
[3] Appendix 1 (included below) summarizes the findings of the cross-national studies discussed in the paper, as well as of a few other studies not mentioned in the text.

Five categories of political factors are investigated: (1) a summary index of *expert ratings* of various aspects of democracy in each province; (2) *electoral participation*, measured by voter turnout in provincial legislative elections; (3) *electoral competition*, measured by the winning party's share of legislative votes and seats and by other indicators; (4) *partisanship*, measured by whether Peronists and their allies won a plurality of provincial legislative votes and seats; and (5) *women in politics*, measured (a) by the share of provincial Chamber of Deputies seats held by women and (b) by the timing of the introduction of a provincial gender quota. The paper assesses the degree to which each of these categories of factors was associated with, respectively, health care spending (measured by the share of provincial public spending devoted to health care), the provision of basic health services (measured by the share of births attended in each province by trained personnel), and health status (measured by the provincial infant mortality rate). Controls are included for (1) overall affluence, measured by per capita residential electricity consumption; (2) unmeasured provincial specificities; and (3) trends affecting all provinces. Each of the variables is observed across the 24 provinces and across from 3 to 11 points in time. Most of the analyses employ panel regression techniques.

Compared to the political systems of other middle-income developing countries, Argentina's is particularly well-suited to a study of the impact at the provincial level of political factors on health outcomes. Argentina has been democratic since December 1983, leaving time for the emergence of solid time series on diverse political variables. Moreover, state agencies during this period have collected extensive and fairly reliable statistical information on political, economic, and health conditions, in some cases on an annual basis for a long succession of years.[4] In addition, Argentina circa 2000 had the most decentralized political system in Latin America, and was tied with Brazil for the region's most decentralized health system.[5] To an unusual degree, then, provincial governments in Argentina during the period analyzed had a fair amount of control over health care spending, health service provision, and other factors likely to influence the infant mortality rate.

Provinces are less heterogeneous than countries not only in terms of culture and history, but also in terms of the measurement of political participation and competition, public health care spending, health service provision, and infant mortality. Accordingly, cross-province analyses are in some respects less vulnerable than cross-national analyses to omitted variable bias and to measurement error. Social scientists have begun to highlight some of the contributions that the analysis of subnational units can make to the understanding of broader societal processes.[6] Hundreds of national and subnational Human Development Reports have been published since 1990, and specialists in the politics of various Latin American countries have devised ways to measure political participation and competition at the provincial level.[7] Demographers have recently estimated the infant mortality level in 2000 in 10,370 subnational units, mostly in Africa, Asia, and Latin America.[8] Economists and public health specialists have explored the mortality impact of social capital, income inequality, and health services across US states; of primary health care programs across Brazilian states; and of geographical factors across

[4] McGuire 2009, Web Appendix A1, reviews the quality of Argentine infant mortality data. The reference to the reliability of Argentine social and economic statistics pertains only to 1983-2006. In early 2007, the Kirchner administration made personnel changes in the National Statistical and Census Institute (INDEC). Many observers concluded that the agency subsequently seriously understated inflation, which in turn distorted estimates of economic growth and of the income poverty headcount (Pisani 2009).
[5] Political system decentralization rankings in Jones 2005 and Treisman 2002; health system decentralization rankings in Mesa-Lago 2008: 249-250. Provincial governments have been involved in health care provision since the late 19th century (Escudé 1976: 35-43).
[6] Snyder 2001.
[7] Beer and Mitchell 2004; Gervasoni 2009.
[8] Storeygard, Balk, Levy, and Deane 2008.

Peruvian provinces.[9] Despite these advances, subnational analysis remains underexploited as a source of information on the relations between political factors and health outcomes.

2. Research Design

The units of analysis are the 24 Argentine provinces and the time period analyzed is (data permitting) 1983-2005. Data on infant mortality (1980-2006), gross provincial product per capita as measured by residential electricity consumption (1983-2004), and the health share of provincial public spending (1991-2004) are available year-by-year.[10] Data on the share of births at home and the share of births not attended by trained personnel are available for 1980, 1990, 2000, 2004, and 2006.[11] Data on voter turnout, dispersion of votes and of legislative seats, and political party with the most newly-won seats in the provincial legislature are available every other year from 1983 to 2009.[12] Expert ratings of various aspects of democracy in Argentine provinces are available for the periods 1983-1987, 1995-1999, 2003-2007, and 2008.[13] The share of provincial legislative seats held by women has been calculated for the years 1991, 1999, 2003, and 2007.[14] A record has been kept of the month and year (between 1991 and 1999) in which each of 22 provinces introduced a gender quota for its provincial Chamber of Deputies (as of mid-2010 two provinces had not introduced such a quota).[15] Data are available for 1987, 1991, 1995, 1999, 2003, and 2007 on (a) the permissiveness of each province's gubernatorial re-election law; (b) the degree to which each province's governor has been able to anoint a successor; (c) the incumbent's vote share in gubernatorial elections; (d) the governing party's

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[9] Respectively Kawachi et al. 1997 and Shi et al. 2005; Macinko et al. 2006; and Gallup, Gaviria, and Lora 2003.
[10] Infant mortality: Argentina. Ministerio de Salud 2007. GPP per capita as measured by residential electricity consumption: Mirabella and Nanni 2006. Health share of provincial social spending: CONES 2007.
[11] Argentina. INDEC 2009.
[12] Calculated from Tow 2010; available in the Web Appendix at http://condor.wesleyan.edu/jmcguire/Data
[13] Gervasoni 2008.
[14] Caminotti and Piscopo 2010.
[15] Lubertino 2003: 37.

vote share in the provincial Chamber of Deputies; and (e) the governing party's seat share in the provincial Chamber of Deputies.[16]

Data from these sources were assembled in a set of databases, and time-series cross-sectional regression was used to explore associations between economic and political factors and health outcomes.[17] To explore some of the processes behind these associations, Gross Provincial Product (GPP) per capita was first associated with infant mortality in the absence of political variables. Next, regressions were run to determine whether, after taking provincial GPP into account, (1) a larger share for health in provincial public spending was associated with wider provision of trained attendance at birth (the relation between "spending" and "services"); (2) a larger share for health in provincial public spending was associated with lower infant mortality (the relation between "spending" and "survival"); and (3) wider provision of trained attendance at birth was associated with lower infant mortality (the relation between "services" and "survival"). Exploration of these associations involving GPP per capita, public health care spending, basic health service provision, and infant mortality creates a baseline for the subsequent analysis of the impact of political factors on health outcomes.

Infant mortality and the share of births attended by trained personnel show convergence over time across provinces, even when transformed logarithmically. When the dependent variable in a time-series cross-sectional analysis exhibits convergence over time across units (e.g., provinces), it is necessary to include a lagged dependent variable on the right-hand side of the equation in order to obtain unbiased and consistent estimates of the coefficients of the regressors. The lagged dependent variable allows the researcher to "model in" the dependence of

[16] Gervasoni 2010b.
[17] The data (.xls), Stata do-files (.do), and statistical output (.smcl) associated with the analyses reported in this paper are publicly available in a Web Appendix at http://condor.wesleyan.edu/jmcguire/Data.html

each observation on previous levels of that observation. The presence of the lagged dependent variable on the right-hand side, however, produces endogeneity, a non-zero correlation between one or more or the regressors and the error term. Because the dependent variable is dependent by construction on the error term, its previous values are also likely to be correlated with the error term. Such a correlation violates one of the assumptions that is necessary to prove that the Ordinary Least Squares (OLS) estimator is unbiased and consistent.

To generate unbiased and consistent parameter estimates in a time-series cross-sectional analysis in the presence of a regressor that is a lagged dependent variable (and in the presence of any other regressors that are suspected of being endogenous, i.e., correlated with the error term), Arellano and Bond (1991) and others have proposed a class of Generalized Method of Moments (GMM) estimators. These estimators use lagged levels of each independent variable, and lagged differences between successive observations of such variables, to instrument the variables that are believed to be endogenous, including the lagged dependent variable. GMM estimators have been shown to outperform OLS estimators in the presence of endogeneity. One such estimator, two-stage system GMM, is used here to check the robustness of the time-series cross-sectional fixed effects OLS estimates of the statistical impact of various political factors on the infant mortality rate. GMM should arguably also have been used to check the robustness of the OLS findings about the statistical impact of political factors on the share of births attended by trained personnel, which likewise show convergence over time across provinces. Observations of the share of births attended by trained personnel are available for only three years (1990, 2000, and 2004) during the time period analyzed (1983-2005), however, and three time observations are insufficient to check the OLS results with the GMM estimator, which uses up one observation by way of the inclusion of the lagged dependent variable as a regressor.

3. Gross Provincial Product per capita and Health Outcomes

Most cross-national studies of the determinants of health outcomes have found that economic output per capita is a powerful determinant of health status as measured by such indicators as life expectancy and infant survival. Studies that emphasize this finding are sometimes characterized as making a claim that "wealthier is healthier."[18] The wealthier is healthier conjecture comes in three variants. The narrowest variant holds that the higher the level (or the larger the rise) of economic output per capita, the lower the level (or the greater the decline) of premature mortality. In an intermediate variant, income inequality as well as GDP per capita is hypothesized to act as a powerful influence on health status. In a broad variant, a much wider class of "socioeconomic" determinants – such as GDP per capita, income inequality, ethnic diversity, religion, fertility, urbanization, geographical location, population density, and sometimes educational attainment -- is said to explain most variation in premature mortality.

To the extent that the narrow variant of the wealthier is healthier hypothesis accords with the evidence, GDP per capita should be a good predictor of the level of premature mortality at a given point in time ("level"), of the decline of premature mortality decline over a specific span of time ("progress"), and of speedups and slowdowns in the pace of premature mortality decline within that span of time ("tempo"). At least three mechanisms could mediate these effects. First, a high level or large rise of economic output per capita could create more survival-enhancing physical assets (e.g., roads). Second, a high level or large rise of economic output per capita could generate more private income, allowing households to buy more or better survival-enhancing goods and services (e.g., food, housing, clothing, medical care) in private markets.

[18] Studies in this tradition include Pritchett and Summers 1996 and Filmer and Pritchett 1999.

Third, a high level or large rise of economic output per capita could produce more resources for the public financing or provision of survival-enhancing social services.

One cross-sectional study of about 100 developing countries found that economic output alone explained 70 percent of the variance in infant and under-5 mortality in 1990. When six additional socioeconomic variables -- income inequality, fertility, urbanization, population density, ethnolinguistic fractionalization, and a dummy variable indicating a population more than ninety percent Muslim -- were added to the right-hand side of the model, the proportion of variance explained rose to 85 percent. The level of GDP per capita also proved to be a good predictor of the level of infant mortality across 93 developing countries in 2005, explaining 69 percent of the cross-national variance. Progress at raising GDP per capita was a much weaker predictor of progress at reducing infant mortality. The average annual percent growth of GDP per capita from 1960 to 2005 explained only 19 percent of the variance in the average annual percent decline of infant mortality across 93 developing countries from 1960 to 2005.[19]

International statistical compendia, including the UNDP's Human Development Report, have reasonably adopted smoothing techniques to arrive at uniform and transparent estimates of infant mortality in developing countries.[20] Using this methodology, each annual observation of the infant mortality rate represents a reconciliation of alternative estimates from a variety of data sources (censuses, surveys, and in a few cases vital registration statistics) for several different years. That is not prohibitively troublesome for cross-national comparisons of infant mortality in the stipulated year, or even for cross-national comparisons of progress at reducing the infant mortality rate over an extended period of time (say, 1960 to 2005), but smoothing complicates

[19] McGuire 2010: 4-5, 44.
[20] UNICEF et al. 2007.

the analysis of the tempo of infant mortality decline within a country (or subnational unit) over a particular span of time. To depict the tempo of infant mortality decline with minimal accuracy, the researcher needs to draw upon the primary census, survey, and/or vital registration findings on the basis of which the smoothed estimates are constructed. In a study of eight middle-income developing countries from 1960 to 2005, close analysis of the underlying infant mortality data turned up numerous intervals in which slow or negative GDP per capita growth coincided with fast infant mortality decline, or vice versa. In the 1970s, Argentina and Chile experienced negative GDP per capita growth but precipitous infant mortality decline, whereas Brazil and Indonesia experienced rapid GDP per capita growth but sluggish infant mortality decline.[21]

Cross-nationally, then, evidence for the wealthier is healthier proposition is strongest for level, next strongest for progress, and weakest for tempo. An implication of this finding is that to focus exclusively on differences in infant mortality levels at a certain point in time, neglecting differences in progress at reducing infant mortality over a particular span of time, is likely to bias findings toward the wealthier is healthier hypothesis and the policy and institutional design recommendations that often accompany it.

This section of the paper explores the narrow variant of the wealthier is healthier hypothesis, which focuses exclusively on the association between economic output per capita and infant mortality, across the 24 Argentine provinces in every third year from 1983 to 2005 (i.e., in 1983, 1986, 1989, 1992, 1995, 1998, 2001, and 2004). The series has three-year rather than one-year gaps because the effect of per capita economic output on infant mortality is unlikely to be immediate; because most of the political factors and health outcomes studied in

[21] McGuire 2010.

subsequent sections of this paper are likewise observed only 3-11 rather than 23 times; and because the Generalized Method of Moments estimator used to check the OLS results works better when the number of periods is smaller than the number of groups (in this case, provinces).

To carry out this analysis, a first task was to decide among alternative available series for Gross Provincial Product (GPP) per capita. One such series covers 1961 to 2001 and is based on national and provincial accounts (Porto et al. 2004). Another covers 1976 to 2004 and is based on residential electricity consumption (Mirabella and Nanni 2006). The latter series was preferred because it came up to 2004 rather than only to 2001, and because estimating GPP per capita on the basis of residential electricity consumption rather than on the basis of national and provincial accounts ameliorates the problem of misleadingly high GPP per capita figures in provinces where oil and gas extraction plays a major role in the provincial economy.[22] Although GPP per capita (like GDP per capita) can be used as a proxy for overall affluence, it is actually a measure of economic output. Even if oil and gas extraction is less of a "curse" for human development than is sometimes supposed,[23] it involves so much value added per worker that it is likely to overestimate significantly the aspects of economic output with the greatest impact on the infant mortality rate. Economic output measured by residential electricity consumption would seem to suffer less from such distortion.

[22] Across Argentina's 24 provinces in 1998, oil and gas extraction employment as a share of total employment was highest in Santa Cruz (9.3 percent), Neuquén (7.7 percent), Chubut (5.6 percent), and Tierra del Fuego (3.5 percent). These provinces ranked 1, 2, 3, and 5 (out of 24) on the ratio of accounts to electricity GPP. The greater the weight of the oil and gas sector in the provincial economy, the greater the difference between GPP per capita based on national and provincial accounts and GPP per capita based on residential electricity consumption. When the ratio of accounts to electricity GPP is regressed on the ratio of oil and gas extraction employment to total employment, the oil and gas extraction share variable has a positive sign (the higher the share of oil and gas extraction employment, the higher accounts relative to electricity GPP) and is significant at better than the .001 level (t = 5.68). Employment figures from Argentina. MTESS 2010. Data and statistical output are in the Web Appendix.

[23] Pineda and Rodríguez 2010.

Data on provincial infant mortality rates are taken from a health ministry publication.[24] These infant mortality figures are compiled from vital registration statistics, which are reasonably complete and accurate in Argentina.[25] Crucially, they are sufficiently complete and accurate to avoid the need to use smoothing techniques to reconcile disparate estimates from scattered years, an unavoidable practice (given the incompleteness and inaccuracy of vital registration statistics in most developing countries) that can nonetheless introduce substantial measurement error into cross-national fixed-effects time-series cross-sectional analyses in which infant mortality is the dependent variable.

Because the infant mortality data display convergence, OLS fixed-effects results for a time-series cross-sectional regression of infant mortality on GPP per capita need to be checked against results using instrumental variables implemented with a GMM estimator. Convergence means that each observation of the infant mortality rate within a given province depends on prior levels of infant mortality within that province. This sort of convergence has been detected in infant mortality time series across nations.[26] It is also evident in the provincial data for Argentina. The standard deviation of the natural log of the infant mortality rate across Argentina's 24 provinces was lower in 2006 (.25) than in 1983 (.32), indicating sigma convergence. The decline of the natural log of the infant mortality rate from 1983 to 2006 in the 12 provinces with the highest 1983 infant mortality rates was .98, compared to only .75 in the 12 provinces with the lowest 1983 infant mortality rates, indicating beta convergence.[27]

[24] Argentina. Ministerio de Salud 2007.
[25] McGuire 2009: Web Appendix A1.
[26] Kenny 2005: 5-6. Cross-national life expectancy series also display convergence (Gray and Purser 2010: 17).
[27] The results of these analyses are available in the Web Appendix at http://condor.wesleyan.edu/jmcguire/Data.html

GMM is an instrumental variables method. In "difference" GMM the time-series observations for each province are first-differenced to remove fixed effects, and lagged levels of each variable are used as instruments for the differenced variables. In "system" GMM, a second equation is generated that uses lagged levels of each variable to instrument the level variables, and the results are combined with those of the first estimation in a "two-step" approach analogous to instrumental variables implemented through two-stage least squares in cross-sectional analyses. System GMM is usually more efficient than difference GMM, but it generates more instruments, some of which may be correlated with the error term. Hansen and Sargan tests can be used to check for such endogeneity; if the model passes these tests the system estimator should be preferred as more efficient.[28]

If the number of instruments generated by the GMM estimators proliferates, bias can be introduced. No test exists for the proper number of instruments, but a rule of thumb is that the number of instruments generated should not exceed the number of groups (provinces) observed. To reduce the number of instruments, the researcher can limit the number of lags on the basis of which the instruments are constructed, and/or combine instruments. Both techniques are adopted here, and are implemented using the xtabond2 routine, which is downloadable for the Stata 10 statistical package (the simpler xtabond routine, which is included in Stata 10, does not allow the researcher to collapse instruments; also, it allows less control over the specific lags used to generate the instruments).[29] The lags used to generate the instruments are chosen so as to maximize the desirability of the values obtained in the Arellano-Bond tests of first- and second-order autocorrelation and in the Hansen and Sargan tests.[30]

[28] Arellano and Bond 2001; Roodman 2006.
[29] Roodman 2003.
[30] Roodman 2008: 9-11.

As Table 2 shows, a simple pooled OLS regression of the natural log of infant mortality on the natural log of each measure of GPP per capita produces, as the narrow variant of the wealthier is healthier conjecture would predict, a strong and statistically significant negative coefficient (In Table 2, Model 2-1 uses electricity GPP; Model 2-5 uses accounts GPP). This result, however, gives full weight to cross-province as well as over-time information, and there may well be unobserved differences across provinces apart from their levels of overall affluence that affect the infant mortality rate. A fixed-effects model, which privileges the longitudinal over the cross-sectional information (thereby reducing the problem of omitted variable bias), produces no statistically significant coefficient; indeed, the sign on the coefficient is unexpectedly positive (Models 2-2 and 2-6). The fixed effects model does not include a regressor measuring lagged infant mortality, however, and the presence of convergence in the data indicates that exclusion of such a regressor will cause the model to suffer from omitted variable bias even in the presence of fixed effects. Inclusion of the lagged dependent variable on the right-hand side of the equation ameliorates this problem, but requires the use of a GMM rather than an OLS estimator.

Difference GMM (Models 2-3 and 2-7) does not produce a statistically significant coefficient on the GPP per capita variable, but the difference GMM models perform poorly on the Arellano-Bond tests of serial correlation, in which AR(1) should be significant at the .05 level whereas AR(2) should be insignificant. The system GMM estimator (Models 2-4 and 2-8) performs better on the diagnostic tests. When GPP per capita is estimated on the basis of residential electricity consumption (Model 2-4), its coefficient in the system GMM analysis is negative, as expected (higher GPP per capita is associated with lower infant mortality), and is significant at better than the .01 level. When GPP per capita is estimated on the basis of provincial and national accounts (Model 2-8), its coefficient in the system GMM analysis is not significant, possibly indicating that the accounts GPP measure is distorted (as a proxy for the overall affluence of people in the province) by the high value-added oil and gas extraction sector. In all subsequent analyses in which GPP per capita is used as a regressor, accordingly, the series based on residential electricity consumption (Mirabella and Nanni 2006) is used.

The health share of provincial spending displays no unambiguous sign of convergence across provinces over time. Accordingly, when the dependent variable is the health share of provincial spending, there is relatively little to be learned by using the GMM estimator to check the OLS time-series cross-sectional fixed-effects estimates. Each of the two available indicators of the share of births attended by trained personnel does display convergence, but data on each indicator are available only for 1980, 1990, 2000, 2004, and 2006; and only the middle three observations fall into the period from 1983-2005 that is the main focus of this paper (Argentina transited to democracy in 1983, and data on GPP per capita are available only through 2004). Accordingly, when the dependent variable is an indicator of trained attendance at birth, the OLS time-series cross-sectional fixed-effects estimates cannot be checked against GMM estimates.

Higher GPP per capita should be associated with a larger share for health in provincial public spending. The richer a province, the more its government should have available to spend on medical services, for which the demand is relentless.[31] As Table 1 reports, the data appear to confirm this hypothesis, although the fixed effects coefficient on GPP per capita is significant at only the .08 level (the pooled OLS coefficient on GPP per capita is significant at better than the .001 level). GPP per capita was also expected to be associated with a higher share of births attended by trained personnel, for reasons involving both the supply and demand side. Table 3

[31] Newhouse 1977: 123.

(Models 3-2 and 3-5) shows that higher GPP per capita was indeed associated with a lower share of births and home and a lower share of births not attended by trained personnel, although the coefficient on GPP per capita was significant at better than the .10 level only in the case of births at home. In general, however, the OLS fixed-effects estimates in the case of spending and services, and the GMM estimates in the case of survival, appear to be consistent with the hypothesis that wealthier is healthier. This conclusion provides a baseline for the examination of the associations among health care spending, trained attendance at birth, and infant mortality, as well as for the analysis of relations between political factors and health outcomes.

4. Health Care Spending, Trained Attendance at Birth, and Infant Mortality

Figure 1 portrays the causal relations that are hypothesized to mediate the association between political factors and health outcomes. The model depicted is an extension of one developed by Mosley and Chen (1984), who argue that nutrition, sanitation, illness control, injury avoidance, and maternal characteristics (age, parity, birth spacing) comprise an exhaustive set of five proximate determinants of infant and child health status. More distal "socioeconomic" forces (affluence, education, cultural values, ecological context, governance) operate, Mosley and Chen argue, only through these proximate determinants. Mosley and Chen do not attempt to theorize the hierarchies and relations that structure the socioeconomic forces themselves, so Figure 1 reports a preliminary attempt to make sense of some of these hierarchies and relations and to signal some of the main variables that may be involved. The dotted lines in Figure 1 depict possible reverse causation whereby survival (as a proxy for general health status), spending, and services could potentially influence some of the hypothesized causal variables. Because the time-series cross-sectional estimation method, coupled with the use of lags on the independent variables in many of the models, reduces the likelihood that reverse causation is contributing to the obtained associations, the influences represented by the dotted lines in Figure 1 will not be a central focus of analysis in this paper.

Socioeconomic forces, health care spending, and social services affect the proximate determinants of infant mortality rather than infant mortality itself, but cross-province data for Argentina are unavailable on many of the proximate determinants, so infant mortality will have to serve as the dependent variable. Data limitations also require the use of only a single control variable, economic output per capita, although the fixed-effects specification controls to some extent for other cross-province differences that may be affecting the infant mortality rate, while the use of time dummies helps to control for national trends affecting all provinces. Furthermore, health care spending is represented by a single indicator, the health share of provincial public spending; and health service provision is likewise proxied only by a pair of variables, the share of provincial births taking place at home and the share of provincial births not attended by trained personnel. Population health status is proxied only by the infant mortality rate, for which reasonably reliable data are available on an annual basis throughout the time period analyzed.

The public health hypotheses depicted in Figure 1 pertain to associations among spending, services, and survival. Hypothesis PH1 holds that greater public health care spending as a share of total public spending (or of economic output per capita) will be associated with the more widespread utilization of basic health services. Cross-nationally, three previous studies have found that greater public health care spending as a share of GDP is associated with a higher share of births attended by trained personnel.[32] Across the 24 provinces of Argentina, data are

[32] Gupta, Verhoeven, and Tiongson 2003: 692; Kruk et al. 2007; McGuire 2010: Chapter 2. Findings are mixed on whether the public health care share of GDP is associated with the share of infants immunized. Gauri and

available on the health share of provincial spending annually from 1991 to 2004, and for the share of births attended by trained personnel in 1990, 2000, and 2004. As Table 3 shows, using pooled OLS (Models 3-1 and 3-4), controlling for GPP per capita, and assuming that the health share of provincial spending was the same in 1990 as in 1991, the health share of provincial spending was associated positively (not negatively, as expected) with both the share of births at home and the share of births not attended by trained personnel. The coefficient lost significance in the fixed effects models (3-3 and 3-6), but its sign remained positive. These findings suggest that in Argentina from 1990 to 2004, the health share of provincial public spending had (to say the least) no beneficial impact on the breadth of utilization of basic health services in a province.

Hypothesis PH2 holds that the greater the utilization of basic social services, the lower the infant mortality rate. Studies in various countries have found that more widespread utilization of maternal and infant health care services, including oral rehydration, infant immunization, and complementary feeding, is associated across households with lower infant or under-5 mortality.[33] Across the Argentine provinces, data are available only on two indicators of basic health service utilization, the share of births at home and the share of births not attended by trained personnel. If one were forced to rely on a single class of indicators of the utilization of basic health services, however, one could do worse than measures of trained attendance at birth, which not only reduces the risk of infant death at the time of birth, but also serves as a proxy for the quality of, and access to, other aspects of maternal and infant health care that affect infant survival in the rest of the first year of life. Empirically, the share of births attended by trained personnel in 1995

Khaleghian 2002: 2119 find no effect of public health care spending as a share of GDP on immunization rates; McGuire 2010: Chapter 2 finds a positive effect.

[33] Bryce et al. 2003; Gauri 2002; Jones et al. 2003.

was correlated closely with expert ratings of maternal and child health "program effort" across the 47 countries that were rated on the latter variable in 1996.[34]

In the pooled OLS models both the share of births at home and the share of births not attended by trained personnel were associated strongly and significantly, as expected, with higher infant mortality (Table 4, Models 4-1 and 4-3). In the fixed effects models, however, each indicator was associated (insignificantly, but unexpectedly) with lower infant mortality (Table 4, Models 4-2 and 4-4).[35] These results (no statistically significant association between either indicator of trained attendance at birth and infant mortality) may be due to the inability of the OLS estimator to take into account convergence in infant mortality rates across provinces over time (the GMM estimator was not used because the data were insufficient to carry out the Arellano-Bond AR(2) test for first differences, which is necessary to assess the validity of that estimator). More time observations are needed to produce a persuasive finding about the relation between services and survival (hypothesis PH2) across the 24 Argentine provinces during the time period analyzed.

Hypothesis PH3 holds that the greater the health share of provincial public spending, the lower the infant mortality rate. Many studies have explored the association between spending and survival at the cross-national level, and although some have confirmed a positive relation, most have found a low or negligible association.[36] Filmer and Pritchett (1999), for example,

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[34] Bulatao and Ross 2002; UNICEF 2004; McGuire 2006.

[35] These results were robust to forward-lagging infant mortality one year and two years ahead of trained attendance at birth, and also to reconstructing the infant mortality outcome as the average infant mortality rate in the three years after the year in which the trained attendance at birth variable is observed. In some of these experiments the sign on the trained attendance at birth variable became negative, as expected, but in no case did either trained attendance at birth variable acquire a coefficient that was statistically significant at the .10 level or better. The data and statistical output associated with these robustness checks are available in the Web Appendix to this paper.

[36] Przeworski et al. (2000: 239-240) found an association between more public health care spending and lower infant mortality; Rajkumar and Swaroop (2002) found one in countries with high-quality government institutions; and

found that GDP per capita, income inequality, mean years of female schooling, ethnolinguistic fractionalization, and having a population that is more than ninety percent Muslim jointly explained 95 percent of the variance in infant or under-5 mortality across about 100 countries, both developing and industrialized, in 1990. When added to these "socioeconomic" control variables (modeling a broad variant of the wealthier is healthier proposition), the share of GDP devoted to public health care spending raised the share of the cross-national variance explained by less than an additional one percent.[37] One study found no significant association, controlling for similar socioeconomic variables, between the share of GDP devoted to public health care spending and infant mortality across 94 developing countries in 1990, or between ten alternative measures of health care spending and infant mortality across 46 poor and middle-income developing countries in 1996.[38] Explanations for the apparently weak cross-national association between spending and survival include misallocation, corruption, weak administrative capacity, and redundancy between public and private health care spending.[39]

Across Argentina's 24 provinces, data were available for infant mortality (the dependent variable), economic output per capita (a control variable), and the health share of provincial public spending (the independent variable of interest) on an annual basis for the years 1991 to 2004. When infant mortality is regressed on the health share of provincial spending across the 24 provinces over the 14 years, controlling for economic output per capita, the findings confirm the typical result of cross-national studies: health care spending has no significant effect on infant

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other studies have found an association between more public health spending and mortality rates among the poor (Bidani and Ravallion 1997; Gupta, Verhoeven, and Tiongson 2003; Wagstaff 2003). A majority of the studies reviewed for this paper, however, found no association between public health care spending and mortality (Barlow and Vissandjée 1999; Filmer and Pritchett 1999; Kim and Moody 1992; McGuire 2006; Musgrove 1996: 44; Shandra et al. 2004; World Bank 2004: 37-40).

[37] Filmer and Pritchett 1999.

[38] McGuire 2006

[39] Filmer, Hammer, and Pritchett 2000; Filmer, Hammer, and Pritchett 2002; Nelson 2007.

mortality. These results were robust to an identical analysis measuring the variables every other year (resulting in 7 time observations for each province rather than 14). Using pooled OLS (Table 5, Model 5-1), the health share of provincial spending was unexpectedly associated with higher infant mortality, with a positive coefficient significant at the .10 level. Using a fixed-effects OLS model (Table 5, Model 5-2) neither the health share of spending nor GPP per capita was associated significantly with infant mortality, although the coefficient on the health share of spending had the expected negative sign (the higher the health share, the lower infant mortality). Using GMM (Table 5, Model 5-3) the sign on the coefficient of the health share of provincial spending turned positive again (the higher the health share, the higher infant mortality), but the estimate fell far short of significance. Accordingly, the provincial data from Argentina provide no grounds for questioning the common finding of the cross-national literature that greater health care spending, except perhaps in some extremely poor countries, is not associated with lower infant mortality once overall affluence, time trends, and unit specificities are controlled for.

5. Democracy and Health Outcomes

A democracy is a political regime with fair elections, basic human and civil rights, and policy making autonomy for elected officials. The first criterion means that political leaders must be chosen in fair and periodic competitive elections in which virtually all adult citizens have the right to vote and to stand for office. The second criterion means that citizens must be granted in principle, and not systematically denied in practice, basic rights like freedom from physical abuse by agents of the state, freedom of speech and the press, freedom of association and assembly, and the right to petition the government. The third criterion implies that the decisions of elected officials should not be vetoed or undermined systematically by unelected powerholders (e.g., military leaders, local bosses, guerrilla groups, religious authorities, former heads of state, or foreign governments).[40]

Democracy may be vindicated instrumentally, by its beneficial consequences for some other human development outcome; affirmed intrinsically, as a good thing in itself (or at least as immediately necessary for living a good life); or justified constructively, by its role in fostering discussion and interaction that enables individuals to decide what is desirable and what is possible.[41] The concern of this paper is mainly with the conjecture that democracies are instrumentally beneficial for health outcomes. To explore and elaborate upon this conjecture, this section of the paper identifies mechanisms by which democracy might be expected to affect health outcomes. It then moves on to explore the association between democracy and health outcomes across the 24 Argentine provinces between 1983 and 2005. Of specific concern is whether a typical province, as it becomes more democratic (or at least as electoral participation and competition rises), will tend to (1) spend more on public health; (2) provide more widespread access to basic health services; and (3) have lower infant mortality.

Democracy could affect the utilization of publicly-funded or publicly-provided social services through electoral incentives, through freedom of expression, through freedom of association and assembly, and/or by shaping citizen expectations about the proper role for the state in financing or delivering social services.[42] Most studies of the association between democracy and public service provision have focused on electoral incentives, noting that "rulers have the incentive to listen to what people want if they have to face their criticism and seek their

[40] These criteria for democracy are similar to those that Robert Dahl (1989: Chapter 8; 1998: 37-38, 85-86) used to define polyarchy, the set of institutions that is necessary, according to Dahl, to achieve the highest feasible attainment of the democratic process in a modern nation-state.
[41] Sen 1999: 148.
[42] Each of these mechanisms is explored in more detail in McGuire 2010.

support in elections."[43] The median voter hypothesis holds that income under majority rule should be redistributed to those with less money to the extent that democratization (e.g., the extension of the franchise) pulls the income of the voter with the median income farther below the mean income of all of the voters.[44] This hypothesis can be transferred from the public redistribution of private incomes to the public provision of social services. As democratization enfranchises a higher share of people inadequately served by public social services, vote-maximizing politicians should try to improve the quality, quantity, and accessibility of such services. Such incentives could result in greater public spending on social services, but they could also produce the reallocation of such spending to uses that politicians believe will win the votes of the previously underserved, or improve the efficiency or effectiveness of public social spending. The latter mechanisms could improve access to and utilization of social services without higher public social spending. One might expect, then, that higher voter turnout and more intense electoral competition would result in a greater health share of public spending, more widespread public provision of basic health services, and lower infant mortality.

Several cross-national studies have found that more democracy is associated with greater health care spending, either as a share of total public spending or as a share of economic output (in Figure 1 this hypothesized association is labeled PS1).[45] Two such studies have also found that more democracy is associated with a higher share of births attended by trained personnel (PS2).[46] A great many cross-national studies have found that more democracy is associated with

[43] Sen 1999: 152 (quotation); Ghobarah, Huth, and Russett 2004: 78; Lake and Baum 2001: 598.
[44] Meltzer and Richard 1981.
[45] Ghobarah, Huth, and Russett 2004: 81; Kaufman and Segura-Ubiergo 2001: 579, 582; Nooruddin and Simmons 2004; Przeworski et al. 2000: 237; Rudra and Haggard 2005. McGuire (2010: 54, 56), however, finds a positive but insignificant association between democracy and public health care spending as a share of GDP.
[46] Lake and Baum (2001) and McGuire (2010: Chapter 2) find a positive association between democracy and trained attendance at birth.

a higher share of infants surviving to their first birthday (PS3).[47] All of these studies use expert ratings of democracy and all control for other factors likely to influence the outcome of interest.

Carlos Gervasoni (2008, 2010b) has attempted to quantify aspects of democracy across the 24 Argentine provinces at various points in time by surveying 124 experts about the degree of democracy prevailing in each province during the periods from 1983 to 1987, 1995 to 1999, and 2003 to 2007 respectively, as well as in the year of the survey itself (2008). Each provincial political system was rated by a minimum of four experts. Respondents were asked to fill out a detailed questionnaire including more than 150 items pertaining to electoral fraud, fairness of media coverage, proscription of candidates, exclusion of voters, freedom of expression, judicial independence, capacity of the provincial legislature to check the power of the governor, religious discrimination, the use by provincial security forces of excessive force against protestors, and other indicators of democracy and authoritarianism. The responses were averaged across experts and aggregated into summary scores for each province, with the most democratic score possible set to 1.00 (which was achieved by the Federal Capital in 1995-1999, 2003-2007, and 2008 and by Santa Fe in 2008) and the least democratic to 5.00 (the least democratic actual score was 4.13, which was registered by Jujuy and by Santiago del Estero in 1995-1999). The scores for 2008 could not be used because information on dependent variables was unavailable for so recent a year, but the scores for 1983-1987, 1995-1999, and 2003-2007 were used in time-series cross-sectional models that include as regressors, respectively, the health share of provincial public spending, the share of provincial births at home, the share of provincial births not assisted by a trained attendant, and the infant mortality rate, controlling for economic output (Table 6).

[47] Altman and Castiglioni 2009; Gerring, Thacker, and Moreno 2007; Klomp and de Haan 2009; Lake and Baum 2001; McGuire 2010; Przeworski et al. 2000; Zweifel and Navia 2000; and Zweifel and Navia 2003 find a positive and statistically significant association between democracy and infant or under-5 survival; Ross 2006 and Shandra et al. 2004 find no such association.

To interpret the findings reported in Table 6, it is important to note that Gervasoni assigned the highest scores on the expert rating of democracy composite index to the least democratic provinces. In other words, the compilation process produced a democratic deficit index. Accordingly, the sign of the coefficient on the democratic deficit (expert rating) index is expected to be (a) negative when the outcome predicted is the health share of provincial social spending (the higher the democratic deficit, the lower the health spending share); (b) positive when the outcome predicted is the share of births at home or the share of births not attended by trained personnel (the higher the democratic deficit, the higher the share of births at home or of births not attended by trained personnel); and (c) positive when the outcome predicted is the infant mortality rate (the higher the democratic deficit, the higher the infant mortality rate).

Results were generally inconsistent with these expectations. When the dependent variable was the health share of provincial spending, the democratic deficit variable acquired the expected negative coefficient, but its magnitude was small in relation to its standard error, achieving statistical significance at only the .17 level (Model 6-1). When the outcome was deprivation of trained attendance at birth, the coefficient of the democratic deficit variable was positive for one measure and negative for the other, with both coefficients falling far short of statistical significance (Models 6-2 and 6-3). Even more anomalous were the findings for infant mortality. Two alternative measures of the infant mortality outcome were used as a dependent variable: the infant mortality rate averaged over all of the years rated by the experts (1983-1987, 1995-1999, and 2003-2004 respectively; Model 6-4), and the infant mortality rate in the final year of each period (1987, 1999, and 2004 respectively; Model 6-5). Regardless of how the infant mortality outcome was measured, the coefficient of the democratic deficit was unexpectedly negative (the greater a province's democratic deficit, the lower its infant mortality rate, controlling for its GPP per capita, its other idiosyncrasies, and time-related factors affecting all provinces). When infant mortality was measured in the final year of each period, the unexpectedly negative coefficient on the expert rating variable achieved statistical significance at the .05 level (Model 6-5).

In contrast to the findings of the cross-national literature, then, which generally found that more democratic countries, all else equal, had greater health spending, more widespread utilization of basic health services, and higher rates of infant survival, the findings of this cross-province analysis of Argentina in the years since democratization in 1983 suggest that provinces with greater democratic deficits (as rated by experts) do not have significantly worse health outcomes. Indeed, the one significant finding was that infant mortality is unexpectedly *lower* in provinces with greater democratic deficits. One possible explanation for these findings might focus on the small number of time periods observed, which makes it impossible to model convergence. Trained attendance at birth, the dependent variable in Models 6-2 and 6-3, and infant mortality, the dependent variable in Models 6-4 and 6-5, show convergence across provinces over time, but three time observations are too few to use the GMM estimator, which allows convergence to be modeled by adding a lagged dependent variable as a regressor (at the cost of using up the first time observation for each province). Inability to model convergence is a big problem. As can be seen by comparing the last to the next-to-last columns of Table 1, when the number of observations is large enough to model convergence by substituting a GMM estimator for the OLS estimator, the sign of the coefficient on the independent variable of interest sometimes flips. Another possible explanation for the finding is, however, that democratic deficits really are unrelated (or are indeed related in the unexpected direction) to health spending, health service utilization, and health status. This possibility is addressed in the concluding section of the paper.

Most quantitative cross-national studies of the impact of democracy on health outcomes have focused on the electoral aspects of democracy, particularly electoral participation and electoral contestation.[48] The remainder of this section of the paper will explore the statistical impact of voter turnout, as well as of a variety of indicators of electoral contestation, on the health share of provincial spending, trained attendance at birth, and infant mortality. A review of the quantitative literature turned up no studies that have tested for associations between voter turnout on the one hand, and health care spending or health service utilization on the other. Three studies, however, each using time-series cross-sectional regression, have explored the association between voter turnout and infant mortality. One did so using fixed effects across 18 Latin American countries from 1972 to 2001; another using random effects across 19 OECD countries from 1960 to 1994; and a third using fixed effects across 16 Indian states from 1970 to 2000.[49] In each of the studies it was hypothesized that higher voter turnout, by "making democratic governments responsive to a larger share of the population," would be associated, all else equal, with lower infant mortality (or, in the case of the Indian states study, with a sharper subsequent decline of infant mortality).[50] None of the studies found such an association. Indeed, the study of OECD countries found that higher turnout was associated with higher infant mortality.[51]

Across the 24 Argentine provinces, figures for voter turnout in provincial Chamber of Deputies elections are available for most provinces in most election years from 1983 to 2007. Voter turnout is defined as votes cast as a percentage of eligible voters (blank and invalid votes,

[48] Dahl (1971) famously singled out participation and contestation as core, orthogonal dimensions of democracy.
[49] Respectively Altman and Castiglioni 2009; Chung and Muntaner 2006; and Kaza 2003.
[50] Quotation from Altman and Castiglioni 2009: 304.
[51] The relation disappeared when a control was inserted for income inequality, but the addition of that variable reduced the number of countries observed from 19 to 17 and the number of years observed from 35 to 3, so it is not clear whether the disappearance of the unexpectedly negative relation between voter turnout and infant survival was due to the new control variable or to the vastly reduced universe of cases (Chung and Muntaner 2006: 838).

which were numerous in some elections, are included in the numerator). Figures were available every second year in the seventeen provinces that renew their Chambers of Deputies by halves, and every fourth year in the seven provinces in which a single election renews the whole Chamber. Although Argentina, like Brazil and Mexico, has compulsory voting, it is generally unenforced.[52] Accordingly, voter turnout varies widely, both across provinces and over time. From 1983 to 2003, voter turnout in 211 elections for provincial Chamber of Deputies averaged 79.2 percent, with a standard deviation of 5.6 percent. It was highest in Tierra del Fuego in 1983 (90.6 percent) and lowest in Santiago del Estero in 1997 (60.0 percent).[53]

Controlling for economic output per capita, voter turnout could be related to the health share of provincial public spending in every second year from 1991 to 2003; to the share of births attended by trained personnel in 1990, 2000, and 2004; and to infant mortality in every second year between 1983 and 2003. In the analyses predicting spending and infant mortality, voter turnout is averaged over the two elections prior to the year in which the dependent variable is measured (i.e., 2 and 4 years prior). In the analyses predicting the proportion of mothers giving birth in the indicated circumstances in 1990, 2000, or 2004, voter turnout is averaged as follows: across the elections of 1983, 1985, 1987, and 1989 for 1990; across the elections of 1991, 1993, 1995, 1997, and 1999 for 2000; and across the elections of 2001 and 2003 for 2004.

The results, presented in Table 7, show no evidence of any statistical relation between voter turnout and the health share of provincial spending (Model 7-1). Higher voter turnout is associated significantly, as expected, with a lower share of births not attended by trained personnel (Model 7-3), but also, contrary to expectations, with a higher share of births at home,

[52] Fornos, Power, and Garand 2004: 936-937.
[53] Data are available in the Web Appendix at http://condor.wesleyan.edu/jmcguire/Data.html. The original turnout figures are from Tow (2010).

although not with a statistically significant coefficient (Model 7-2). The sign on the voter turnout coefficient is positive (contrary to expectations) in the OLS model predicting infant mortality (Model 7-4; higher turnout is associated with higher infant mortality), but negative (in line with expectations) in the GMM model (Model 7-5; higher turnout is associated with lower infant mortality). Neither estimator, however, produces a statistically significant coefficient on voter turnout. Accordingly, confirming the findings of the cross-national (and cross-provincial) analyses summarized above, voter turnout lacked a robust association with health outcomes across Argentina's 24 provinces from 1983 to 2003. Perhaps voter turnout does not vary enough to influence legislators' decisions about which way to vote on health-related issues. Alternatively, high voter turnout may not really hold legislators more accountable to the public. Another possibility is that high voter turnout does hold legislators more accountable to the public, but that the public is indifferent (or even in some cases opposed) to raising the share of health spending, to providing more widespread access to trained attendance at birth, or to doing what is needed to accelerate the decline of the infant mortality rate.

The competitiveness of elections might also be expected to influence health outcomes. The more competitive the election, one might conjecture, the greater the incentive to legislators, in the interest of fending off challengers, to raise the share of health care in provincial social spending, to introduce or improve primary health care programs designed to deliver trained attendance at birth to the underserved, or to undertake other actions likely to reduce the infant mortality rate. The literature reviewed for this paper included only one study that explored the association between electoral competitiveness and a health outcome. This study found that, across 16 Indian states observed every fifth year from 1970 to 2000, electoral competitiveness (measured as the share of seats won in the state legislature by the most-voted party minus the share of seats won by the second most-voted party) was an insignificant predictor of infant mortality decline over the subsequent five-year period.[54]

In the analysis of Argentine provinces, four indicators of competitiveness were devised, two involving the dispersion of votes and two involving the dispersion of seats in elections to the provincial Chamber of Deputies. The Chamber serves as a unicameral provincial legislature in sixteen provinces (including the Federal Capital) and as the lower house of a bicameral provincial legislature in the remaining eight. The dispersion of votes was measured alternatively as the vote share of the most-voted party or coalition ("vote share") and as the ratio of the vote share of the most-voted party or coalition to the vote share of the second most-voted party or coalition ("vote gap"). The dispersion of seats was measured as the share of seats won by the most-voted party or coalition ("seat share") and as the ratio of the share of seats won by the most-voted party or coalition to the share of seats won by the second most-voted party or coalition ("seat gap"). Higher scores on each variable are interpreted to mean a less competitive Chamber of Deputies election. As with voter turnout, the data were calculated from figures provided by Tow (2010), and the competitiveness observations were lagged analogously to the voter turnout observations. The results of analyses associating vote share, vote gap, seat share, and seat gap respectively with the health share of provincial spending, non-attendance at birth by trained personnel, and infant mortality are summarized in Table 1 and detailed in Tables 8-11.

Carlos Gervasoni (2010a) has compiled for 22 of the 24 Argentine provinces in 1987, 1991, 1995, 1999, and 2003 alternative measures of provincial electoral competition and of power concentration in an incumbent provincial governor. Gervasoni classifies as indicators of

[54] Kaza 2003: 19, 33-38.

electoral competition (1) the share of the *gubernatorial* vote won by the party of the governor and (2) the share of the *legislative* vote won by the party of the governor. He classifies as indicators of power concentration in the incumbent (3) the share of legislative seats won by the party of the incumbent governor, (4) the permissiveness of the province's re-election law, and (5) the ability of the incumbent governor actually to anoint a successor. Variables (1), (2), and (3) range continuously from 0 to 100; each is expressed as a percentage of votes or seats won in the indicated year's election. Variables (4) and (5) are ordinal. The permissiveness of a province's gubernatorial re-election law is coded 0 if the law forbids immediate re-election; 1 if it allows only one immediate re-election; 2 if it allows two immediate re-elections; and 3 if it allows unlimited immediate re-elections. The ability of the incumbent governor actually to anoint a successor is coded 0 if an opposition candidate succeeds the incumbent; 1 if the successor is a co-partisan who is not a family member or close ally of the incumbent; 2 if the successor is a family member or close ally of the incumbent; and 3 if the incumbent is re-elected.

As scaled in the present analysis (although not in Gervasoni's original data), a higher score on each of the five variables means either a less competitive election or more power concentration in an incumbent -- which can itself lead to a less competitive election. For convenience, then, the five indicators conceptualized and operationalized by Gervasoni, along with the four compiled directly from data in Tow (2010) (vote share, vote gap, seat share, and seat gap in provincial Chamber of Deputies elections), will henceforth be referred to collectively as indicators of *electoral non-competitiveness*. The higher the score on such an indicator, the lower the ability of the electorate to hold incumbents accountable for improving the provision of public goods, as opposed to sponsoring pork-barrel projects or delivering private payoffs.[55] Accordingly, more electoral non-competitiveness should be associated with a lower share for health care in provincial public spending, more non-attendance at birth by trained personnel, and higher infant mortality. If this expectation is met, the signs on the coefficients in the last five columns of Table 1 in the rows with the electoral non-competiveness variables (corresponding to Tables 8-16 inclusive) should be negative and significant for the health share of public spending, positive and significant for the share of births at home and for the share of births not attended by trained personnel, and positive and significant for infant mortality.

In the event, none of the nine electoral non-competitiveness variables were related significantly, as expected, to a lower health share of provincial spending, although seven of the nine had coefficients whose signs pointed in the expected negative direction (Table 1), and two of these seven negative coefficients were significant at the .11 and .13 levels respectively (seat gap in Model 11-1; incumbent share of gubernatorial vote in Model 14-1). None of the nine electoral non-competitiveness variables were related significantly to a higher share of births not attended by trained personnel, and seven of the nine were associated, unexpectedly, with a significantly *lower* share of births at home (Table 1 and Tables 8-16). Only the seat share of the most-voted party (Model 10-4) and the permissiveness of the gubernatorial re-election law (Model 12-4) were associated with the infant mortality rate in the expected positive direction and at the .10 level or better. In the former case, but not in the latter, the GMM estimate weakly confirmed the OLS estimate (Models 10-5 and 12-5). In short, evidence that electoral non-competitiveness was associated with worse health outcomes in the data set analyzed was weak in the cases of spending and survival and non-existent in the case of services. The only coefficients

[55] Lizzeri and Persico (2001) and Diaz-Cayeros (2010) produce findings consistent with this logic.

that proved to be significant at the .05 level or better pointed in the unexpected direction (more electoral non-competiveness was associated with a lower share of births at home). This finding may be due to the conservative statistical techniques employed (fixed effects, robust standard errors), but it could also mean that changes in the competitiveness of provincial legislative and gubernatorial elections did not affect the evolution of health care spending, trained attendance at birth, or infant mortality within each of Argentina's 24 provinces from 1983 to 2005.

6. Partisanship, Women in Politics, and Health Outcomes

Cross-national analysis has been used to explore the role of partisanship and ideology in shaping health outcomes. One might expect that left-leaning governments, as compared to right-leaning governments, would be associated with higher public health spending, more widespread utilization of basic social services (e.g., trained attendance at birth), and lower infant mortality. Research findings for developing countries are at odds with this conjecture, however. One time-series cross-sectional study of 14 Latin American countries observed annually from 1973 to 1997 found that when "popularly based governments" (including the Peronists in Argentina) were in power, public health and education spending grew more slowly, rather than faster as expected.[56] Similarly, a cross-sectional analysis of 120 countries circa 1970 found that left governments had no significant positive association with the Physical Quality of Life Index (PQLI), and that right governments were actually associated, controlling for other relevant variables, with a higher score on the PQLI (provided that government spending was low).[57]

[56] Kaufman and Segura-Ubiergo 2001. The authors note that this finding is inconsistent with some studies of rich countries, in which left governments appear to spend more on health and education.
[57] Moon 1991.

Across the 24 provinces of Argentina, partisanship/ideology was measured simply by a dummy variable representing whether the party winning the most seats in the provincial legislature was (1) or was not (0) linked to the Peronist movement. This variable proved to have no significant statistical association with the health share of provincial public spending, with trained attendance at birth, or with infant mortality (Table 17). This lack of an association between Peronist electoral strength and better health outcomes is not surprising. For one thing, Peronism has remarkable ideological and programmatic flexibility. It is never a good idea to try to predict what a Peronist-dominated legislature will do if one's only information is that the legislature is dominated by Peronists. Second, Peronism has strong ties to an urban formal-sector coalition that includes that includes many owners, managers, civil servants, professionals, university faculty and students, union leaders, and regularly-employed workers whose interests are not always the same as those of the very poor and destitute.[58]

Argentina in 1991 became the first Latin American country to implement a law reserving for women a stipulated proportion of the slots (33 percent in the Argentine case) on a party's list of candidates for national legislative seats. Two years later, an executive decree strengthened the law by requiring the reserved slots for women to be in "electable" positions (preventing party leaders from placing all of the women at the bottom of the list where they would be unlikely to win a seat). Since the passage of this law, many provinces have also adopted gender quotas for their own provincial legislatures.[59] A certain amount of evidence suggests that a rise in women's political participation is associated with greater health care spending and with lower infant and child mortality. A study of the 50 US states from 1900 to 1936 using trend-break analysis found

[58] McGuire 1997; McGuire 1999; McGuire 2010.
[59] Jones 1998.

that the passage of a female suffrage law was associated with a rise in public spending on health care and on charities and hospitals; with a decline of overall mortality rates; and with a decline of mortality rates from specific diseases.[60] A time-series cross-sectional analysis of 16 Indian states observed in every fifth year from 1970 to 2000 found using fixed effects that the share of legislative seats held by women was associated with steeper infant mortality decline over the subsequent five-year period, controlling for other relevant factors.[61]

Across the 24 Argentine provinces, the share of provincial legislative seats occupied by women in 1991, 1999, and 2003 respectively was not associated significantly two years later either with a higher share for health care in provincial public spending, with a higher share of births attended by trained personnel, or with a lower infant mortality rate (Table 18). Consistent with the study of the 50 US states, however, a trend-break analysis finds that the timing of the introduction of a gender quota in an Argentine province between 1992 and 1999 was associated with a statistically significant and substantively large decline of the infant mortality rate (Table 19). Across the 24 provinces (unweighted by population), the average infant mortality rate in 1991, the year before provincial gender quota laws began to go into effect, was 25.0 per 1000. Multiplying through, the coefficient on the gender quota dummy variable in Model 19-5 (.075) means that, had a provincial gender quota been in effect in each province in 1991, the average infant mortality rate would have been 19.6 rather than 25.0 per 1000, about 20 percent lower.[62] Replication of the OLS fixed effects analysis with the GMM estimator turned up no significant association between the timing of the implementation of a gender quota and a lower infant mortality rate, but the GMM estimator uses lags of the levels and differences of the independent

[60] Miller 2008.
[61] Kaza 2003.
[62] The data and calculations are available in the Web Appendix for this paper.

variables to instrument for the present values of those variables, a procedure that would seem to be senseless when the regressor of interest is a 0/1 dummy variable. Accordingly, accepting the OLS fixed effects results, the strongest finding in the whole analysis is that the introduction of a law requiring party lists competing for seats in elections to provincial Chamber of Deputies to include a set proportion of women (30-50 percent) in electable positions had a statistically significant and substantively important association with a lower provincial infant mortality rate.

7. Summary and Implications

In addition to this finding about the gender quota, what stands out from this analysis is the weakness and fragility of associations between political factors and health outcomes across the 24 provinces of Argentina from 1983 to 2005. This result is at odds with much of the cross-national literature, which has tended to find a positive association between democracy (however measured) on the one hand and health outcomes (spending, services, and survival) on the other.

Several factors may help to account for the discrepancy between the findings of cross-national studies and the findings of this cross-province study. First, variation on both the independent variables (e.g., voter turnout) and dependent variables (e.g., infant mortality) tends to be greater across countries than across provinces, and the findings of many cross-national studies reflect this greater cross-unit variation. Second, this analysis uses province fixed effects. Accordingly, its estimates are produced mainly on the basis of the information that comes from changes over time within provinces, and only secondarily (in the sense that there are 24 time series from which to extract information) from differences across provinces. Much of the cross-country literature uses random effects or other statistical techniques (e.g., pooled OLS), in which parameter estimates are made on the basis of cross-unit as well as within-unit variation. The statistical techniques used in this paper, notably fixed effects and heteroskedasticity-robust standard errors, are thus more conservative than those used in some cross-national studies.

A more substantive reason why most political factors were associated only weakly (if at all) with health outcomes across the 24 Argentine provinces from 1983 to 2005 may have to do with national-level public health policies. Although provincial governments in Argentina have considerable leeway over the allocation of public expenditure, national-level policies sometimes overshadow province-level policies in influencing health service utilization and population health status. In October 2004, for example, the Ministry of Health, in collaboration with the World Bank, introduced the Plan Nacer (Birth Plan) in an effort to improve the health status of uninsured people in nine impoverished northwestern and northeastern provinces. Participants in the Plan Nacer were entitled to receive, free of charge, a package of 80 basic health interventions (checkups, medications, obstetric services, etc.).[63] The coverage of the Plan Nacer expanded rapidly, from 40,000 beneficiaries in January 2005 to 450,000 in June 2007.[64] In the nine provinces in which the Plan Nacer was initially implemented, infant mortality fell from 18.7 per 1000 in 2004 to 14.2 per 1000 in 2006 (24 percent), whereas in the fifteen provinces that the Plan had not yet reached, infant mortality fell only from 12.2 to 11.3 per 1000 (8 percent).[65] If the Plan Nacer had raised trained attendance at birth and reduced infant mortality about equally in each of the nine provinces that initially received it, each of the nine provinces would have shown

[63] World Bank 2006: 10-11, 17.

[64] World Bank 2006: 84; World Bank 2007: 27. The 450,000 entrolled in the Plan Nacer in June 2007 made up 65 percent of the eligible population in the nine provinces initially targeted. The estimated cost of the Plan Nacer was US $10 per beneficiary per month (World Bank 2006: 17).

[65] Calculated from absolute numbers of registered births and infant deaths aggregated across the 9 and 15 provinces in 2000 (Argentina. Ministerio de Salud 2001: Table 22, p. 61); 2003 (Argentina. Ministerio de Salud 2004: Table 29, p. 67); 2004 (Argentina. Ministerio de Salud 2005: Table 31, p. 69); and 2006 (Argentina. Ministerio de Salud 2007: Table 32, p. 77). From 2000 to 2003, by contrast, before the plan was implemented, the rate had barely budged in either set of provinces From 2000 to 2003, infant mortality fell only from 21.9 to 21.1 in the nine provinces that would get the Plan Nacer in its initial stage, and from 14.3 to 14.2 in the other 15 provinces.

a similar percentage decline in infant mortality, which would tend to obscure any association between within-province changes in political circumstances and infant mortality. Year dummies were included in all models to help account for multi-province interventions like the Plan Nacer, but would not fully pick up the statistical impact of a program that is implemented in one year in nine provinces and in a subsequent year in the remaining fifteen.

Other substantive factors may also help to explain why fluctuations in voter turnout and in electoral competitiveness had unexpectedly weak associations with health outcomes across the Argentine provinces analyzed here. The expectation of a stronger association comes principally from the median voter hypothesis described in the third paragraph of Section 5. As Keefer and Khemani (2005) have noted, however, some of the assumptions of the median voter hypothesis may not hold in developing countries. In many such countries, Keefer and Khemani point out, voters lack information about incumbent performance; doubt that challengers can deliver what they have promised; and/or prefer to vote according to religious, regional, or ethnic identity rather than on the basis of a candidate's perceived capacity to deliver basic services.[66]

It might be added, moreover, that even when voters (in any country) do cast their ballots on the basis of policy preferences, the policies they prefer will not necessarily be conducive to rapid mortality decline. For example, voters in rich and poor countries alike tend to demand curative services excessively and preventive services insufficiently, so politicians who seek their support may well enact policies that are not optimal for mortality decline. A preoccupation with curative at the expense of preventive health services could help to explain why democratization is sometimes found to be associated with a decline of immunization coverage.[67] In the United

[66] Keefer and Khemani 2005; see also World Bank 2004: 81-85.
[67] Gauri and Khaleghian 2002: 2124-2125.

States, the legalization of some currently illegal drugs (by reducing opportunities for criminal enterprise) and the more effective enforcement of traffic laws (by means of automated cameras, for example) would likely lead to substantial reductions in deaths due to violence and traffic accidents respectively. Such reforms conflict with other widely-held values, however, and vote-seeking politicians do not seem to be stumbling over one another to advocate them.

As Amartya Sen has written, "democracy does not serve as an automatic remedy of ailments as quinine works to remedy malaria. The opportunity it opens up has to be positively grabbed in order to achieve the desired effect." Democracy creates opportunities; leaders and citizens have to take advantage of them.[68] Only by recognizing that democracy does not automatically provide the benefits expected of it, and by identifying critical points at which breakdowns occur, can leaders and citizens empower themselves to improve its quality.

[68] Sen 1999: 147-158, quotation from 155.

Figure 1: Model Guiding the Quantitative Analysis

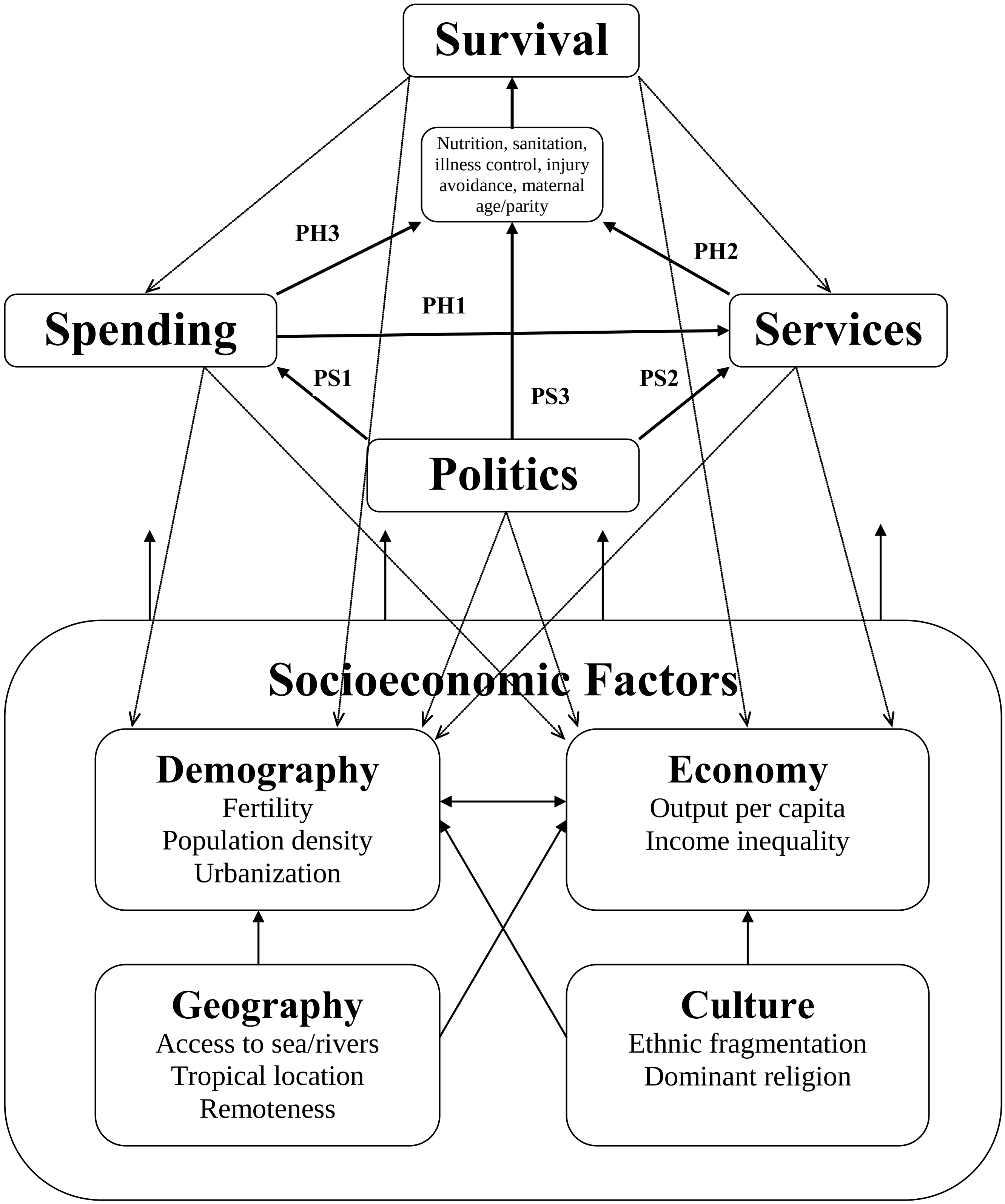

Table 1: Summary of Main Statistical Findings

	Table	Periods (Nº Obs.)	Periodicity	Health share of provincial spending	Share of births at home	Share of births not attended by trained personnel	Infant mortality	Infant mortality
Method				TSCS Fixed Effects	TSCS Fixed Effects	TSCS Fixed Effects	TSCS Fixed Effects	Two-Step System GMM
GPP (by resid. elec. consumption), ln.	Not shown	14 (336)	Every year 1991-2004	**.032† (1.86)**				
GPP (by resid. elec. consumption), ln.	5	4	1980, 1990, 2000, 2004		**-1.256† (1.87)**	-1.073 (1.17)		
GPP (by resid. elec. consumption), ln.	2	8 (93)	Every 3º yr 1983-2004				.049 (0.42)	**-.248** (3.11)**
Health share of provincial spending	3	4 (96)	1980, 1990, 2000, 2004		2.890 (0.72)	4.511 (0.81)		
% births at home, ln	4	4 (96)	1980, 1990, 2000, 2004				-.035 (0.63)	AR(2) test invalid
% births not attend. by trained pers., ln	4	4 (96)	1980, 1990, 2000, 2004				-.022 (0.80)	AR(2) test invalid
Health share of provincial spending	5	13-14 (312-36)	Every year 1991-2004				-.086 (0.15)	.956 (1.01)
Expert rating of democracy	6	3 (68-71)	83-87, 95-99, 03-04	-.006 (1.42)	.108 (0.71)	-.158 (0.92)	***-.126* (2.15)***	(only 3 periods)
Voter turnout as % eligible voters	7	3-9 (65-215)	See T. 7	.00003 (0.08)	.042 (1.01)	**-.119* (2.24)**	.004 (0.80)	-.009 (1.01)
Vote share for most-voted party	8	3-9 (64-215)	See T. 8	-.002 (0.95)	***-.026* (2.65)***	-.018 (0.85)	-.001 (0.46)	.001 (0.50)
Vote gap between 2 most-voted parties	9	3-9 (64-215)	See T. 9	.00011 (0.34)	***-.390* (2.19)***	.197 (0.66)	-.001 (0.04)	-.135 (1.00)
Seat share for most-voted party	10	3-9 (63-198)	See T. 10	-.010 (0.53)	***-1.44† (1.80)***	-1.234 (1.01)	**.201† (1.73)**	.209 (1.53)
Seat gap between 2 most-voted parties	11	3-9 (63-198)	See T. 11	-.002 (1.67)	***-.163* (2.49)***	-.076 (0.59)	.015 (1.44)	.018 (1.44)
Permissiveness of gov. re-election law	12	3-9 (63-198)	See T. 12	.005 (1.46)	.046 (0.47)	.102 (0.85)	**.803† (1.83)**	-.004 (0.18)
Governor's ability to control successor	13	3-5 (67-116)	See T. 13	-.002 (0.99)	-.052 (0.74)	.075 (0.62)	.001 (0.00)	.064 (0.82)
Share of gov. vote to incumbent party	14	3-9 (61-102)	See T. 14	-.0003 (1.56)	***-.014 (2.55)****	.006 (0.50)	-.005 (0.18)	-.005 (0.84)
Share of leg. vote to incumbent party	15	3-9 (61-102)	See T. 15	-.0002 (0.84)	***-.019 (2.87)****	-.008 (0.89)	-.023 (0.62)	-.005 (0.71)
Share of leg. seats to incumbent party	16	3-9 (61-102)	See T. 16	-.0002 (0.84)	***-.019 (2.87)****	-.008 (0.89)	-.023 (0.62)	.569 (1.01)
Peronists win most votes for prov legis.	17	3-9 (64-215)	See T. 17	-.002 (0.77)	.585 (1.04)	-.736 (1.53)	.022 (0.69)	-.069 (0.52)
Women as % provincial deputies	18	3 (66-70)	1991, 1999, 2003	.000 (0.05)	-.012 (1.11)	.008 (0.50)	-.002 (0.54)	(only 3 periods)
Gender quota (0 before, 1 after)	19	12 (288)	Every year 1991-2004	-.004 (1.28)			**-.075*** (4.73)**	-.001 (0.05)

Boldface: P ≤ .10, signed in the expected direction
***Boldface, italics*: P ≤ .10, signed in the *unexpected* direction**

Table 2: Gross Provincial Product per capita and Infant Mortality

	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8
Dependent variable	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 3rd year 1983-2006	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 3rd year 1983-2006	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 3rd year 1983-2006	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 3rd year 1983-2006	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 3rd year 1983-2006	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 3rd year 1983-2006	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 3rd year 1983-2006	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 3rd year 1983-2006
Max. Nº years observed	8	8	6	7	7	7	5	6
Avg. Nº years observed	7.9	7.9	5.92	6.92	6.9	6.9	4.92	5.92
Nº Provinces	24	24	24	24	24	24	24	24
Nº Observations	190	190	142	166	166	166	118	142
Method	Pooled OLS	TSCS FE	Two-Step Diff GMM	Two-Step Sys GMM	Pooled OLS	TSCS FE	Two-Step Diff GMM	Two-Step Sys GMM
Infant mortality rate lagged one period (three years)			.736 (1.05)	.859*** (4.02)			.182 (0.63)	1.145*** (7.18)
GPP/cap by resident. electricity cnsmp., ln (Mirabella and Nanni 2006), every 3rd year 1983-2004	-.559*** (12.03)	.049 (0.42)	-.079 (0.15)	-.248** (3.11)				
GPP/cap by national and provincial accts., ln (Porto et al. 2004), every 3rd year 1983-2001					-.292*** (9.31)	.072 (0.89)	.229 (0.85)	.199 (0.92)
R-sq (R-sq within for FE)	.6859	.8196			.6622	.7945		
P > F	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
Lag limits			(5 3)	(4 3)			(5 3)	(4 4)
Instrument set collapsed?			Yes	Yes			Yes	Yes
Nº Instruments			12	13			11	10
AR(1) (P > z)			.370	.047			.515	.050
AR(2) (P > z)			.466	.473			.132	.207
Hansen test ($P > X^2$)			.733	.686			.606	.412
Diff Hansen: GMM, Dif ($P > X^2$)			.	.652				.412
Sargan test ($P > X^2$)			.312	.377			.363	.700

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown; in difference GMM the constant is eliminated by differencing) and time dummies (not shown) for 1983, 1986, 1989, 1992, 1995, 1998, 2001, and 2004 respectively (except that there is no GPP per capita observation for 2004 in the Porto et al. series). In the OLS and fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM models, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in GMM models are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14).

Table 3: Health Share of Provincial Spending and Trained Attendance at Birth

	3-1	3-2	3-3	3-4	3-5	3-6
Dependent variable	Share of births at home (INDEC 2009), ln, in 1980, 1990, 2000, and 2004	Share of births at home (INDEC 2009), ln, in 1980, 1990, 2000, and 2004	Share of births at home (INDEC 2009), ln, in 1980, 1990, 2000, and 2004	Share of births not attended by trained personnel (INDEC 2009), ln, in 1980, 1990, 2000, and 2004	Share of births not attended by trained personnel (INDEC 2009), ln, in 1980, 1990, 2000, and 2004	Share of births not attended by trained personnel (INDEC 2009), ln, in 1980, 1990, 2000, and 2004
Maximum number of years observed	4	4	4	4	4	4
Average number of years observed	4.0	4.0	4.0	4.0	4.0	4.0
Nº Provinces	24	24	24	24	24	24
Nº Observations	96	96	96	96	96	96
Method	Pooled OLS	TSCS FE	TSCS FE	Pooled OLS	TSCS FE	TSCS FE
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1983, 1990, 2001, 2004	-4.110*** (10.76)	-1.256† (1.87)	-1.272† (1.78)	-4.730*** (12.32)	-1.073 (1.17)	-1.099 (1.13)
Health share of provincial spending (1980: Porto et al. 2004; 1991, 2000, 2004: CONES 2009),	11.921** (2.74)		2.890 (0.72)	12.220* (2.36)		4.511 (0.81)
R-sq (R-sq within for FE)	.5936	.8121	.8156	.5959	.6662	.6727
P > F	.0000	.0000	.0000	.0000	.0000	.0000

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown) for 1980, 1990, 2000, and 2004 respectively. All models use heteroskedasticity-robust standard errors.

Table 4: Trained Attendance at Birth and Infant Mortality

	4-1	4-2	4-3	4-4
Dependent variable	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1980, 1990, 2000, and 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1980, 1990, 2000, and 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1980, 1990, 2000, and 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1980, 1990, 2000, and 2004
Maximum number of years observed	4	4	4	4
Average number of years observed	4.0	4.0	4.0	4.0
Nº Provinces	24	24	24	24
Nº Observations	96	96	96	96
Method	Pooled OLS	TSCS FE	Pooled OLS	TSCS FE
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1983, 1990, 2000, 2004	-.285* (2.20)	-.097 (0.53)	-.389** (2.82)	-.078 (0.46)
Share of births at home (INDEC 2009), ln, in 1980, 1990, 2000, and 2004	.155*** (5.37)	-.035 (0.63)		
Share of births not attended by trained personnel (INDEC 2009), ln, in 1980, 1990, 2000, and 2004			.107*** (5.00)	-.022 (0.80)
R-sq (R-sq within for FE)	.5651	.8744	.5065	.8743
P > F	.0000	.0000	.0000	.0000

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown) for 1980, 1990, 2000, and 2004. All models use heteroskedasticity-robust standard errors. The results in Table 4 are robust to forward-lagging infant mortality one year and two years ahead of trained attendance at birth, and also to reconstructing the infant mortality outcome as the average infant mortality rate in the three years after the year in which the trained attendance at birth variable is observed. In some of the experiments the sign on the trained attendance at birth variable became negative, as expected, but in no case did either trained attendance at birth variable acquire a coefficient that was statistically significant at the .10 level or better.

Table 5: Health Share of Provincial Public Spending and Infant Mortality

	5-1	5-2	5-3
Dependent variable	Infant mortality, ln (Argentina. Ministerio de Salud 2007), 1991-2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007), 1991-2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007), 1991-2004
Maximum number of years observed	14	14	13
Average number of years observed	14.0	14.0	13.0
Nº Provinces	24	24	24
Nº Observations	336	336	312
Method	Pooled OLS	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (one year)			.813*** (4.55)
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1991-2004	-.635*** (11.11)	-.031 (0.22)	-.279† (1.83)
Health share of provincial spending (CONES 2009), 1991-2004	.678† (1.77)	-.086 (0.15)	.956 (1.01)
R-square (R-square within for FE)	.3628	.6826	
P > F	.0000	.0000	.0000
Lag limits			(3 2)
Instrument set collapsed?			Yes
Nº Instruments			22
AR(1) (P > z)			.007
AR(2) (P > z)			.751
Hansen test ($P > X^2$)			.388
Diff-in-Hansen (GMM, Diff.) ($P > X^2$)			..682
Sargan test ($P > X^2$)			.304

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the pooled OLS and fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in GMM models are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). Results are robust to substituting the natural log for the absolute level of the health share of provincial social spending; lagging the spending variable one period, alternative lag limits in the GMM model, and limiting observations to every other year from 1992 to 2004 inclusive (7 periods).

Table 6: Democratic Deficit (As Rated By Experts) and Health Outcomes

Dependent variable	6-1 Health share of provincial spending (CONES 2009), level at end of democracy rating period	6-2 Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	6-3 Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, and 2004	6-4 Infant mortality, ln (Argentina. Ministerio de Salud 2007), average during democracy rating period	6-5 Infant mortality, ln (Argentina. Ministerio de Salud 2007), level at end of democracy rating period
Maximum number of periods observed	3	3	3	3	3
Average number of periods observed	3.0	2.9	2.8	3.0	3.0
Nº Provinces	24	24	24	24	24
Nº Observations	71	70	68	71	71
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	TSCS FE
Gross provincial product per capita, ln (Mirabella and Nanni 2006), average for 1983-87, 1995-99, and 2003-04 respectively	.007 (0.32)	-1.662* (2.30)	-1.323 (1.48)	-.007 (0.05)	-.075 (0.40)
Democratic deficit (expert rating) (Gervasoni 2008) in 1983-87, 1995-99, and 2003-04	-.006 (1.42)	.108 (0.71)	-.158 (0.92)	-.040 (1.67)	-.126* (2.15)
R-squared (within)	.2800	.6946	.5943	.9415	.8928
p > F	.0371	.0000	.0000	.0000	.0000

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown) for the three periods, 1983-1987, 1995-1999, and 2003-2004. All models use heteroskedasticity-robust standard errors.

Table 7: Voter Turnout and Health Outcomes

	7-1	7-2	7-3	7-4	7-5
Dependent variable	Health share of provincial spending (CONES 2009), every 2 years 1991-2004	Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, and 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004
Maximum number of years observed	7	3	3	9	9
Average number of years observed	7.0	2.8	2.7	9.0	8.9
Nº Provinces	24	24	24	24	24
Nº Observations	167	67	65	215	214
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (two years)					.482 (1.58)
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1983-2004	.036* (2.07)	-2.708* (2.14)	-.934 (0.78)	.069 (0.64)	-.130 (0.33)
Voter turnout as a percent of eligible voters (Tow 2010), 1983-2003	.00003 (0.08)	.042 (1.01)	-.119* (2.24)	.004 (0.80)	-.009 (1.01)
R-squared "within" (fixed effects are used)	.1804	.4604	.4541	.8044	
P > F	.0070	.0000	.0000	.0000	.0000
Lag limits for GMM model (xtabond2)					(5 4)
Instrument set collapsed in GMM Model?					Yes
Nº Instruments in GMM model					18
AR(1) (P > z)					.021
AR(2) (P > z)					.797
Hansen test ($P > X^2$)					.428
Diff-in-Hansen (GMM, Diff.) ($P > X^2$)					.329
Sargan test ($P > X^2$)					.010

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). In the analyses predicting spending and infant mortality, voter turnout is averaged over the two elections prior to the year in which the dependent variable is measured (i.e., 2 and 4 years prior). In the analyses predicting the proportion of mothers giving birth in the indicated circumstances in 1990, 2000, or 2004, voter turnout is averaged as follows: across the elections of 1983, 1985, 1987, and 1989 for 1990; across the elections of 1991, 1993, 1995, 1997, and 1999 for 2000; and across the elections of 2001 and 2003 for 2004.

Table 8: Vote Share for Most-Voted Party and Health Outcomes

	8-1 Health share of provincial spending (CONES 2009), every 2 years 1991-2004	**8-2** Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	**8-3** Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	**8-4** Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004	**8-5** Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004
Maximum number of years observed	7	3	3	9	9
Average number of years observed	7.0	2.8	2.7	9.0	8.9
Nº Provinces	24	24	24	24	24
Nº Observations	167	66	64	215	214
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (two years)					.483* (2.16)
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1983-2004	.036* (2.08)	-2.574* (2.16)	-.1.121 (1.12)	.060 (0.55)	-.239 (0.69)
Vote share for most-voted party in provincial Chamber (Tow 2010), 1983-2003	-.002 (0.95)	-.026* (2.65)	-.018 (0.85)	-.001 (0.46)	.001 (0.50)
R-squared "within" (fixed effects are used)	.1881	.4778	.4353	.8065	
P > F	.0087	.0000	.0006	.0000	.0000
Lag limits for GMM model (xtabond2)					(3 2)
Instrument set collapsed in GMM Model?					Yes
Nº Instruments in GMM model					18
AR(1) (P > z)					.005
AR(2) (P > z)					.679
Hansen test ($P > X^2$)					.527
Diff-in-Hansen (GMM, Diff.) ($P > X^2$)					.511
Sargan test ($P > X^2$)					.000

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in GMM models are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). In the analyses predicting spending and infant mortality, the vote share is averaged over the two elections prior to the year in which the dependent variable is measured (i.e., 2 and 4 years prior). In the analyses predicting the proportion of mothers giving birth in the indicated circumstances in 1990, 2000, or 2004, vote share for the most-voted party or coalition is averaged as follows: across the elections of 1983, 1985, 1987, and 1989 for 1990; across the elections of 1991, 1993, 1995, 1997, and 1999 for 2000; and across the elections of 2001 and 2003 for 2004.

Table 9: Vote Gap Between Most- and Next Most-Voted Party and Health Outcomes

Dependent variable	**9-1** Health share of provincial spending (CONES 2009), every 2 years 1991-2004	**9-2** Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	**9-3** Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	**9-4** Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004	**9-5** Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004
Maximum number of years observed	7	3	3	9	9
Average number of years observed	7.0	2.8	2.7	9.0	8.9
Nº Provinces	24	24	24	24	24
Nº Observations	167	66	64	215	214
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (two years)					.799† (1.79)
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1983-2004	.035* (2.14)	-2.236† (1.89)	-1.153 (1.11)	.066 (0.60)	.066 (0.07)
Vote gap between 1º & 2º most-voted party in provincial Chamber (Tow 2010), 1983-2003	.00011 (0.34)	-.390* (2.19)	.197 (0.66)	-.001 (0.04)	-.135 (1.00)
R-squared "within" (fixed effects are used)	.1823	.4859	.4324	.8030	
P > F	.0096	.0000	.0021	.0000	.0000
Lag limits					(5 4)
Instrument set collapsed?					Yes
Nº Instruments					18
AR(1) (P > z)					.043
AR(2) (P > z)					.797
Hansen test ($P > X^2$)					.493
Diff-in-Hansen (GMM, Diff.) ($P > X^2$)					.172
Sargan test ($P > X^2$)					.556

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). In the analyses predicting spending and infant mortality, the vote gap between the most-voted and the next most-voted party (or coalition) is averaged over the two elections prior to the year in which the dependent variable is measured (2 and 4 years prior). In the analyses predicting the proportion of mothers giving birth in the indicated circumstances in 1990, 2000, or 2004, the vote gap between the most-voted and the next most-voted party is averaged as follows: across the elections of 1983, 1985, 1987, and 1989 for 1990; across the elections of 1991, 1993, 1995, 1997, and 1999 for 2000; and across the elections of 2001 and 2003 for 2004.

Table 10: Seat Share for Most-Voted Party and Health Outcomes

Dependent variable	10-1 Health share of provincial spending (CONES 2009), every 2 years 1991-2004	10-2 Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	10-3 Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	10-4 Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004	10-5 Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004
Maximum number of years observed	7	3	3	9	9
Average number of years observed	6.7	2.7	2.7	8.6	8.6
Nº Provinces	23	23	23	23	23
Nº Observations	153	63	61	198	197
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
lagged dependent variable					.658** (3.17)
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1983-2004	.028 (1.59)	-2.672* (2.18)	-.827 (0.88)	.066 (0.57)	.048 (0.17)
Seat share for the most-voted party in provincial Chamber (Tow 2010), 1983-2003	-.010 (0.53)	-1.442† (1.80)	-1.234 (1.01)	.201† (1.73)	.209 (1.53)
R-squared "within" (fixed effects are used)	.1667	.4486	.3990	.8054	
P > F	.0093	.0000	.0019	.0000	.0000
Lag limits					(3 2)
Instrument set collapsed?					Yes
Nº Instruments					18
AR(1) (P > z)					.005
AR(2) (P > z)					.679
Hansen test (P > X^2)					.527
Diff-in-Hansen (GMM, Diff.) (P > X^2)					.511
Sargan test (P > X^2)					.000

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). In the analyses predicting spending and infant mortality, the seat share is averaged over the two elections prior to the year in which the dependent variable is measured (i.e., 2 and 4 years prior). In the analyses predicting the proportion of mothers giving birth in the indicated circumstances in 1990, 2000, or 2004, the seat share is averaged as follows: across the elections of 1983, 1985, 1987, and 1989 for 1990; across the elections of 1991, 1993, 1995, 1997, and 1999 for 2000; and across the elections of 2001 and 2003 for 2004. All analyses exclude the province of La Rioja, which has an unsually high score on the seat gap variable.

Table 11: Seat Gap Between Most- and Next Most-Voted Party and Health Outcomes

	11-1	11-2	11-3	11-4	11-5
Dependent variable	Health share of provincial spending (CONES 2009), every 2 years 1991-2004	Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004
Maximum number of years observed	7	3	3	9	9
Average number of years observed	6.7	2.7	2.7	8.6	8.6
Nº Provinces	23	23	23	23	23
Nº Observations	153	63	61	198	197
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (two years)					.567** (1.79)
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1983-2004	.027 (1.55)	-2.574* (2.09)	-.634 (0.67)	.078 (0.65)	.074 (0.30)
Seat gap between 1º & 2º most-voted party in provincial Chamber (Tow 2010), 1983-2003	-.002 (1.67)	-.163* (2.49)	-.076 (0.59)	.015 (1.44)	.018 (1.44)
R-squared "within" (fixed effects are used)	.1747	.4513	.3908	.8035	
P > F	.0037	.0000	.0045	.0000	.0000
Lag limits					(3 2)
Instrument set collapsed?					Yes
Nº Instruments					18
AR(1) (P > z)					.006
AR(2) (P > z)					.684
Hansen test ($P > X^2$)					.771
Diff-in-Hansen (GMM, Diff.) ($P > X^2$)					.879
Sargan test ($P > X^2$)					.130

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). In the analyses predicting spending and infant mortality, the seat gap between the most-voted and the next most-voted party (or coalition) is averaged over the two elections prior to the year in which the dependent variable is measured (2 and 4 years prior). In the analyses predicting the proportion of mothers giving birth in the indicated circumstances in 1990, 2000, or 2004, the seat gap between the most-voted and the next most-voted party is averaged as follows: across the elections of 1983, 1985, 1987, and 1989 for 1990; across the elections of 1991, 1993, 1995, 1997, and 1999 for 2000; and across the elections of 2001 and 2003 for 2004. All analyses exclude the province of La Rioja, which has an unusually high score on the seat gap variable.

Table 12: Re-Election Law for Provincial Governor and Health Outcomes

	12-1	**12-2**	**12-3**	**12-4**	**12-5**
Dependent variable	Health share of provincial spending (CONES 2009) in 1993, 1997, 2001, and 2004	Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005
Maximum number of years observed	4	3	3	5	4
Average number of years observed	3.9	2.9	2.9	4.8	3.9
Nº Provinces	24	24	23	24	24
Nº Observations	94	69	67	116	94
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (four years)					1.106*
					(2.36)
Gross provincial product per capita, ln (Mirabella and	.029	-1.751*	-1.395	-.502	.044
Nanni 2006)	(1.51)	(2.34)	(1.41)	(0.20)	(0.17)
Did provincial constitution permit 0, 1, 2, or ∞ (coded "3")	.005	.046	.102	.803†	-.004
immediate re-elections (Gervasoni 2010b)?	(1.46)	(0.47)	(0.85)	(1.83)	(0.18)
R-squared "within" (fixed effects are used)	.1614	.7353	.5931	.8543	
P > F	.2715	.0000	.0000	.0000	.0000
Lag limits					(3 3)
Instrument set collapsed?					No
Nº Instruments					11
AR(1) (P > z)					.021
AR(2) (P > z)					.150
Hansen test ($P > X^2$)					.326
Diff-in-Hansen (GMM, Diff.) ($P > X^2$)					.205
Sargan test ($P > X^2$)					.435

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). The re-election law is measured in 1991, 1995, 1999, and 2003 in the analyses predicting spending; in 1987, 1999, and 2003 in the analyses predicting birth circumstances; and in 1987, 1991, 1995, 1999, and 2003 in the analyses predicting infant mortality (the lagged dependent variable in the GMM model requires the exclusion of observations for 1987). In the GMM analysis the constitutional re-election law is treated as an exogenous variable. Gervasoni's (2010b) data were supplemented by other sources as detailed in the data set available in the Web Appendix at http://condor.wesleyan.edu/jmcguire/Data.html.

Table 13: Incumbent Control of Succession to Governorship and Health Outcomes

	13-1	**13-2**	**13-3**	**13-4**	**13-5**
Dependent variable	Health share of provincial spending (CONES 2009) in 1993, 1997, 2001, and 2004	Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005
Maximum number of years observed	4	3	3	5	4
Average number of years observed	3.7	2.8	2.8	4.6	3.9
Nº Provinces	22	22	22	22	22
Nº Observations	81	61	61	102	94
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (four years)					1.127** (2.36)
Gross provincial product per capita, ln (Mirabella and Nanni 2006)	.030 (1.49)	-2.126** (2.34)	-1.373 (1.12)	-.634 (0.24)	.394 (0.90)
Succession control: victory by opposition = 0, co-partisan = 1, close ally = 2, re-election = 3 (Gervasoni 2010b)	-.002 (0.99)	-.052 (0.74)	.075 (0.62)	.001 (0.00)	.064 (0.82)
R-squared "within" (fixed effects are used)	.1498	.7687	.5948	.8383	
P > F	.3592	.0000	.0000	.0000	.0000
Lag limits					(3 3)
Instrument set collapsed?					No
Nº Instruments					14
AR(1) (P > z)					.045
AR(2) (P > z)					.887
Hansen test (P > X^2)					.268
Diff-in-Hansen (GMM, Diff.) (P > X^2)					.243
Sargan test (P > X^2)					.390

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). Incumbent control of succession is measured in 1991, 1995, 1999, and 2003 in the analyses predicting spending; in 1987, 1999, and 2003 in the analyses predicting birth circumstances; and in 1987, 1991, 1995, 1999, and 2003 in the analyses predicting infant mortality (the lagged dependent variable in the GMM model requires the exclusion of observations for 1987). In the GMM analysis incumbent control of succession is treated as an endogenous variable. Gervasoni (2010b) provided no coding for the Federal Capital or for Tierra del Fuego.

Table 14: Share of Gubernatorial Vote Won By Incumbent Party and Health Outcomes

	14-1	**14-2**	**14-3**	**14-4**	**14-5**
Dependent variable	Health share of provincial spending (CONES 2009) in 1993, 1997, 2001, and 2004	Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005
Maximum number of years observed	4	3	3	5	4
Average number of years observed	3.7	2.8	2.8	4.6	3.9
Nº Provinces	22	22	22	22	22
Nº Observations	81	61	61	102	94
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (four years)					1.253*** (4.16)
Gross provincial product per capita, ln (Mirabella and Nanni 2006)	.027 (1.30)	-2.055** (2.34)	-1.367 (1.14)	-.650 (0.25)	.370 (0.89)
Share of gubernatorial vote won by the incumbent party or coalition (Gervasoni 2010b)	-.0003 (1.56)	-.014 (2.55)*	.006 (0.50)	-.005 (0.18)	-.005 (0.84)
R-squared "within" (fixed effects are used)	.1498	.7843	.5945	.8384	
P > F	.3592	.0000	.0000	.0000	.0000
Lag limits					(3 .)
Instrument set collapsed?					Yes
Nº Instruments					12
AR(1) (P > z)					.014
AR(2) (P > z)					.582
Hansen test (P > X^2)					.631
Diff-in-Hansen (GMM, Diff.) (P > X^2)					.783
Sargan test (P > X^2)					.712

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). The share of the gubernatorial vote won by the incumbent party or coalition is measured in 1991, 1995, 1999, and 2003 in the analyses predicting spending; in 1987, 1999, and 2003 in the analyses predicting birth circumstances; and in 1987, 1991, 1995, 1999, and 2003 in the analyses predicting infant mortality (the lagged dependent variable in the GMM model requires the exclusion of observations for 1987). In the GMM analysis the share of the gubernatorial vote won by the incumbent party or coalition is treated as an endogenous variable. Gervasoni (2010b) provided no data for the Federal Capital or for Tierra del Fuego.

Table 15: Share of Deputy Vote Won By Incumbent Party and Health Outcomes

	15-1	15-2	15-3	15-4	15-5
Dependent variable	Health share of provincial spending (CONES 2009) in 1993, 1997, 2001, and 2004	Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005
Maximum number of years observed	4	3	3	5	4
Average number of years observed	3.7	2.8	2.8	4.6	3.9
Nº Provinces	22	22	22	22	22
Nº Observations	81	61	61	102	94
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (four years)					1.198** (3.31)
Gross provincial product per capita, ln (Mirabella and Nanni 2006)	.028 (1.29)	-2.231*** (4.24)	-1.423 (1.13)	-.766 (0.30)	.398 (1.08)
Share of provincial Chamber of Deputies vote won by the incumbent party or coalition (Gervasoni 2010b)	-.0002 (0.84)	-.019 (2.87)*	-.008 (0.89)	-.023 (0.62)	-.005 (0.71)
R-squared "within" (fixed effects are used)	.1516	.7977	.5959	.8393	
P > F	.5734	.0000	.0000	.0000	.0000
Lag limits					(3 .)
Instrument set collapsed?					Yes
Nº Instruments					12
AR(1) (P > z)					.016
AR(2) (P > z)					.506
Hansen test (P > X^2)					.543
Diff-in-Hansen (GMM, Diff.) (P > X^2)					.282
Sargan test (P > X^2)					.660

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). The share of the provincial Chamber of Deputies vote won by the incumbent party or coalition is measured in 1991, 1995, 1999, and 2003 in the analyses predicting spending; in 1987, 1999, and 2003 in the analyses predicting birth circumstances; and in 1987, 1991, 1995, 1999, and 2003 in the analyses predicting infant mortality (the lagged dependent variable in the GMM model requires the exclusion of observations for 1987). In the GMM analysis the share of the vote won by the incumbent party or coalition is treated as an endogenous variable. Gervasoni (2010b) provided no data for the Federal Capital or for Tierra del Fuego.

Table 16: Share of Deputy Seats Won By Incumbent Party and Health Outcomes

	16-1	16-2	16-3	16-4	16-5
Dependent variable	Health share of provincial spending (CONES 2009) in 1993, 1997, 2001, and 2004	Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1989, 1993, 1997, 2001, and 2005
Maximum number of years observed	4	3	3	5	4
Average number of years observed	3.7	2.8	2.8	4.6	3.9
Nº Provinces	22	22	22	22	22
Nº Observations	81	61	61	102	94
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (four years)					1.100*** (4.05)
Gross provincial product per capita, ln (Mirabella and Nanni 2006)	.028 (1.29)	-2.231*** (4.24)	-1.423 (1.13)	-.766 (0.30)	.078 (0.14)
Share of provincial Chamber of Deputies seats won by the incumbent party or coalition (Gervasoni 2010b)	-.0002 (0.84)	-.019 (2.87)*	-.008 (0.89)	-.023 (0.62)	.569 (1.01)
R-squared "within" (fixed effects are used)	.1516	.7977	.5959	.8393	
P > F	.5734	.0000	.0000	.0000	.0000
Lag limits					(3 3)
Instrument set collapsed?					No
Nº Instruments					14
AR(1) (P > z)					.032
AR(2) (P > z)					.432
Hansen test (P > X^2)					.652
Diff-in-Hansen (GMM, Diff.) (P > X^2)					.297
Sargan test (P > X^2)					.454

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). The share of the provincial Chamber of Deputies seats won by the incumbent party or coalition is measured in 1991, 1995, 1999, and 2003 in the analyses predicting spending; in 1987, 1999, and 2003 in the analyses predicting birth circumstances; and in 1987, 1991, 1995, 1999, and 2003 in the analyses predicting infant mortality (the lagged dependent variable in the GMM model requires the exclusion of observations for 1987). In the GMM analysis the share of seats won by the incumbent party or coalition is treated as an endogenous variable. Gervasoni (2010b) provided no data for the Federal Capital or for Tierra del Fuego. The results are robust to the exclusion of La Rioja, which scores unusually high on the share of provincial Chamber of Deputies seats won by the incumbent party or coalition.

Table 17: Peronist Plurality in Provincial Chamber of Deputies and Health Outcomes

Dependent variable	**17-1** Health share of provincial spending (CONES 2009), every 2 years 1991-2004	**17-2** Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	**17-3** Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, and 2004	**17-4** Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004	**17-5** Infant mortality, ln (Argentina. Ministerio de Salud 2007), every 2 years 1983-2004
Maximum number of years observed	7	3	3	9	9
Average number of years observed	7.0	2.8	2.7	9.0	8.9
Nº Provinces	24	24	24	24	24
Nº Observations	167	66	64	215	214
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE	Two-Step Sys GMM
Infant mortality rate lagged one period (two years)					1.074* (2.44)
Gross provincial product per capita, ln (Mirabella and Nanni 2006), 1983-2004	.035* (2.15)	-2.671* (2.05)	-.899 (0.92)	.066 (0.58)	.664 (1.13)
Peronists win the most votes in provincial deputy elections (Tow 2010), 1983-2003	-.002 (0.77)	.585 (1.04)	-.736 (1.53)	.022 (0.69)	-.069 (0.52)
R-sq (R-sq within for FE)	.1836	.4681	.4485	.8039	
P > F	.0067	.0000	.0000	.0000	.0000
Lag limits					(5 4)
Instrument set collapsed?					Yes
Nº Instruments					18
AR(1) (P > z)					.030
AR(2) (P > z)					.711
Hansen test (P > X^2)					.696
Diff-in-Hansen (GMM, Diff.) (P > X^2)					.843
Sargan test (P > X^2)					.319

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown). In the fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM model, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in the GMM model are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). "Peronists win the most votes" is a 0-1 dummy variable. In the analyses predicting spending and infant mortality, each observation is whether the Peronists or a Peronist-dominated coalition won the most votes (0 = no, 1=yes) in the two elections prior to the year in which the dependent variable is measured (the value is the mean of the two elections; it can be 0.0, 0.5, or 1.0). In the analyses predicting spending and infant mortality, the dummy variable for Peronists winning the most votes is averaged over the two elections prior to the year in which the dependent variable is measured (i.e., 2 and 4 years prior). In the analyses predicting the proportion of mothers giving birth in the indicated circumstances in 1990, 2000, or 2004, vote share for the most voted party or coalition is averaged as follows: across the elections of 1983, 1985, 1987, and 1989 for 1990; across the elections of 1991, 1993, 1995, 1997, and 1999 for 2000; and across the elections of 2001 and 2003 for 2004.

Table 18: Provincial Chamber of Deputies Seats Held By Women and Health Outcomes

	18-1	**18-2**	**18-3**	**18-4**
Dependent variable	Health share of provincial spending (CONES 2009) in 1993, 2001, and 2004	Share of births at home, ln (INDEC 2009) in 1990, 2000, and 2004	Share of births not attended by trained personnel, ln (INDEC 2009) in 1990, 2000, and 2004	Infant mortality, ln (Argentina. Ministerio de Salud 2007) in 1993, 2001, and 2005
Maximum number of periods observed	3	3	3	3
Average number of periods observed	2.9	2.8	2.8	2.9
Nº Provinces	24	24	24	24
Nº Observations	70	68	66	70
Method	TSCS FE	TSCS FE	TSCS FE	TSCS FE
Gross provincial product per capita, ln (Mirabella and Nanni 2006) in 1993, 2001, and 2004	.021 (0.77)	-1.917** (2.89)	-1.473* (2.27)	-.076 (0.44)
Provincial deputy seats held by women in 1991, 1999, and 2003 (Caminotti and Piscopo 2010)	.000 (0.05)	-.012 (1.11)	.008 (0.50)	-.002 (0.54)
R-squared (within)	.1174	.7680	.6455	.8609
p > F	.5049	.0000	.0000	.0000

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant and time dummies (not shown). All models use heteroskedasticity-robust standard errors.

Table 19: Gender Quota for Provincial Chamber of Deputies and Health Outcomes

	19-1	19-2	19-3	19-4	19-5	19-6	19-7	19-8
Dependent variable	Health share of provincial spending (CONES 2009) two years hence	Health share of provincial spending (CONES 2009) two years hence	Health share of provincial spending (CONES 2009) mean over next 5 years	Infant mortality, ln (Argentina. Ministerio de Salud 2007) two years hence	Infant mortality, ln (Argentina. Ministerio de Salud 2007) two years hence	Infant mortality, ln (Argentina. Ministerio de Salud 2007) mean over next 5 years	Infant mortality, ln (Argentina. Ministerio de Salud 2007) two years hence	Infant mortality, ln (Argentina. Ministerio de Salud 2007) mean over next 5 years
Average number of years observed	12.0	12.0	12.0	12.0	12.0	9.0	12.0	8.0
Nº Provinces	24	24	24	24	24	24	24	24
Nº Observations	288	288	288	288	288	216	288	192
Method	Pooled OLS	TSCS FE	TSCS FE	Pooled OLS	TSCS FE	TSCS FE	Two-Step Sys GMM	Two-Step Sys GMM
lagged dependent variable							.592**	.962***
							(2.90)	(14.34)
Gross provincial product (GPP) per capita, ln (Mirabella and Nanni 2006), 2 years hence	.080***	.036†		-.581***	-.041		-.179	
	(6.26)	(1.73)		(15.90)	(0.29)		(1.36)	
GPP per capita, ln (Mirabella and Nanni 2006), mean over next five years			.048*			-.080		.126
			(2.21)			(0.42)		(0.80)
Gender quota (0 in years before introduced, 1 in years when/after introduced), 1991-2004	-.017***	-.004	-.001	.040	-.075***	-.039**	-.001	.002
	(3.94)	(1.28)	(0.38)	(1.32)	(4.73)	(3.16)	(0.05)	(0.11)
R-sq (R-sq within for FE)	.4119	.1485	.2420	.5224	.6318	.6826		
P > F	.0000	.0035	.0013	.0000	.0000	.0000	.0000	.0000
Lag limits							(3 2)	(3 3)
Instrument set collapsed?							Yes	Yes
Nº Instruments							21	13
AR(1) (P > z)							.012	.003
AR(2) (P > z)							.510	.116
Hansen test ($P > X^2$)							.375	.463
Diff-in-Hansen (GMM, Diff.) ($P > X^2$)							.385	.463
Sargan test ($P > X^2$)							.130	.250

Top row in each cell: unstandardized regression coefficient. Bottom row (in parentheses): absolute value of t-statistic. Significance: †10%; *5%; **1%; ***0.1%. All two-tailed. All models include a constant (not shown) and time dummies (not shown) for 1991-2004 inclusive. In the OLS and fixed effects models, heteroskedasticity-robust standard errors are used. In the two-step GMM models, Windmeijer finite-sample corrected standard errors are used (Roodman 2006: 9-11). Lag limits in GMM models are chosen to come as close as possible to generating significant AR(1) P-values, insignificant AR(2) p-values, and Sargan and Hansen statistics whose P-values are greater than .25 but do not approach 1.00 (Roodman 2008: 11, 18; Petreski 2009: 16; Efendic, Pugh, and Adnett 2010: 13-14). Results are robust to lagging the gender quota 1, 3, 4, and 5 years (the results shown above lag the introduction of the gender quota 2 years in Models 19-1, 19-3, 19-5, and 19-7 and 0 years in the other models), alternative lag limits in the GMM models, and treating the introduction of the gender quota as an endogenous variable (the results in Models 19-7 and 19-8 treat the introduction of the gender quota as an exogenous variable).

Appendix 1: Cross-National Quantitative Studies of Political Factors and Health Outcomes

Study	Dependent variables	Control variables	Independent variables	Statistical technique	Units of Analysis
Altman and Castiglioni 2009	Infant survival, life expectancy	GDP per capita	Democracy (0/1) +S; Polity score +S; voter turnout 0,NS	TSCS FE	18 Latin American countries x 30 years 1972-2001, n=265-305
Avelino, Brown, and Hunter 2005	Public health spending as % GDP	Urbz, %Age65+, GDPcapLev, GDPcapChg, unemp, infl, trade open, cap mobil	Democracy (0/1) +,NS; degree of democracy (Polity) "did not affect finding"	TSCS Lagged DV, TSCS RE	19 Latin American countries x 20 years, 1980-1999. n=311
Besley and Kudamatsu 2006	Infant survival, life expectancy, water, sanit, illit, immuniz.	GDP per capita, recent colonial heritage, contemporary democracy, mean years of schooling, legal origin, year, region	Polity IV. Long term democratic experience +S on infant survival, life exp, water, sanit, illit, immuniz.	TSCS RE	92-160 countries observed every 5th/10th year 1962/2002 (543-1309 cases)
Bhalla 1997	Infant survival. Average annual infant mortality decline (logistic) 1973-1990	GDP per capita growth, mean years schooling in 1972	Freedom House average 1973-1992 +,S	Cross-sectional	67 countries circa 1972
Blaydes and Kayser 2007	Change in calorie availabiliy, Change in calorie availability from animal products	GDP/cap, GDP growth	Polity IV score -,NS; Polity IV interacted with growth +,S	TSCS FE, RE	All countries with GDP/cap below $10,000 1961-2003; 3372 observations

Study	Dependent variables	Control variables	Independent variables	Statistical technique	Units of Analysis
Chung and Muntaner 2006	Infant survival, under-5 survival, normal birth weight	GDP/cap, Gini, social security spending as % GDP, % pop covered by medical insurance	Voter turnout -,S, % left vote +,S; relations to survival (but not lbw) disappeared when Gini controlled for	TSCS RE	19 OECD 1960-1994; 653 (w/o Gini) or 61 (w/Gini) observations
Franco, Álvarez-Dardet, and Ruiz 2004	Life expectancy, infant survival maternal mortality	GDP/cap, income inequality, public spending as % GDP	Trichotomized democracy indicator based on Freedom House +,S	Cross-sectional in 1998	140-162 countries in 1998
Gauri and Khalegian 2002	Immunization coverage	GDPcap, literacy, poptot, popdens, aid, TVs, state failure	Polity IV score -S (except in low income, +S); Institutional quality +S	TSCS FE	~175 low and middle-income countries 1980-1997, n=1,897-2,195
Gerring, Thacker, and Alfaro 2007	Infant survival	GDPcap, female illiteracy, urbanization, instability	Contemporary democracy -NS; Democratic history +S	TSCS FE	158 countries observed annually 1960-2000, n=4,492
Gerring, Thacker, and Moreno 2005	Infant survival, life expectancy	GDPcap, regional dummies, socialism, British legal orig, latitude, ethnic fractlz, poptot, airdist, oil, diamonds, Protestant	Democratic stock +S, Centripetalism (parliamentary system, PR electoral system, weak federalism) +S	TSCS RE	125-127 countries, n=2,633-2,663
Ghobarah, Huth, and Russett 2004	Public health spending as % GDP	GDPcap, income ≠, mean yrs school, ethnic hetero., enduring int'l rivalry	Polity IV score +,S.	Cross-sectional c. 2000	Spending: 179 countries observed in 2000

Study	Dependent variables	Control variables	Independent variables	Statistical technique	Units of Analysis
Kaufman and Segura-Ubiergo 2001	Annual change in public health and education spending (a) per capita, (b) as % GDP, and © as % of total public spending	GDPcap, popage, business cycle, exch rate, trade dep, capital dep	Democracy (0/1 Polity) +S; popularly-based governments -S	TSCS FE	14 Latin American countries observed annually 1973-1997; n=284
Kaza 2003	Infant survival, % decline since previous data point	State domestic product per capita, average annual % rise since previous data point	% female state legislators +,S; % female voters -,NS (+,NS GLS); voter turnout +,NS; electoral competition +,NS (0,NS GLS)	TSCS FE, GLS	16 Indian states every fifth year 1970-2000, n= about 112
Klomp and de Haan 2009	A 19-indicator factor of population health status and a 10-indicator factor of health system resources	GDPcap, income ineq, investment, trade openness, 2º enrollment, total pop., fertility, urbaniz, climate, other variables	15-indicator factor of democracy +,S on health status and +,NS on health resources. Regime instability -,S on health status and -,S on health resources	Structural equation modeling	121-129 countries; indep var averages for 1980-1999; dep var measured in 2000-05.
Lake and Baum 2001	Infant survival, life expectancy, birth attendance, immunization, several educ indic, pop per doctor safe water	GDPcap, land area, population, urbanization, OECD	Polity III democracy +S except for some immunization & pop per doctor findings; robust to substitution of Freedom House for Polity III	Cross-sectional at multiple time periods, also TSCS RE	Cross-section: various years 1970-1992, n=67-104; TSCS: every 5th year 1967-1992, n=382

Study	Dependent variables	Control variables	Independent variables	Statistical technique	Units of Analysis
McGuire 2010	Infant survival, public health care spending as a % GDP, utilization of basic social services (trained attendance at birth, child immuniz., female education, access to safe water, access to adequate sanitation)	GDP per capita, Gini index of income inequality, ethnolinguistic fractionalization, whether population is 90%+ Muslim, population density, urbanization (also share age 65+ when predicting health sh. of public spending)	Polity IV. Long term democ.: +,S on infant survival; +,S on most social services; +,NS on health share of public spending. Short term democ.: +,NS on infant survival; +,NS on most social services; +,NS on health share of public spending.	Cross-sectional in 1990	100 developing countries in 1990; n=100
Miller 2008	Age-specific mortality, mortality from specific diseases, public health spending, public health spending on charities and hospitals	(Trend-break analysis)	Passage of female suffrage law +,S	TSCS FE	50 states annually 1900-1936
Moon 1991	Physical Quality of Life Index (index of infant mortality, life expectancy at age 1, literacy)	% labor in agric, govt spending, interaction terms, either democ or ideol orient of govt c. 1970	Democ (Bollen avg. 60&65) +,S; Leftist govt (Blondel) 0; Rightist govt +,S iff. govt spending is low	Cross-sectional c. 1970	120 countries circa 1970.
Przeworski et al. 2000	Infant survival, life expectancy	age structure of population, fertility	Democracy (0/1, ACLP) +S	TSCS, RE with Heckman two-step correction for selection bias	Up to 141 countries observed annually 1950-1990, n=1,417 (IMR), 916 (LE)

Study	Dependent variables	Control variables	Independent variables	Statistical technique	Units of Analysis
Ross 2006	Infant survival	GDPcap, GDP growth, population density, AIDS. No controls for factors "that may reflect government intervention." Others tried and found insignif.	Cumulative and contemporary democracy (Polity IV), both +,NS	TSCS FE and RE	168 countries observed annually 1970-2000; multiple imputation used to fill in missing values
Rudra and Haggard 2005	Infant survival, level of health care spending as a % of total govt spending	Trade, capital flows, debt, dependency, growth, potential labor power, GDPcap	Democracy (Polity), +,S on both outcomes	TSCS FE	57 developing countries annually (?) from 1972 to 1997 (n=793 for infant mortality and 650 for health spending)
Shandra, Nobles, London, and Williamson 2004	Infant survival in 1997	IMR 1980, GDPcap, enroll, pub h sp %GDP, commod concentr, MNC penet, IMF condit	Democracy (Bollen) in 1980, +,NS, but democracy attenuates the detrimental effect of dependency on IMR	Cross-sectional, cross-lagged panel design	50-59 "non-core" nations; DV 1997, Ivs 1975-1980
Vollmer and Ziegler 2009	Life expectancy	GDPcap, income ineq, literacy, ethnic fract., war, AIDS	Democracy (Polity, averaged over previous five years) +,S	TSCS FE	100-143 countries observed on five occasions 1970-2003, n=431-583
Wickrama and Mulford 1996	Infant survival, life expectancy, gross primary enrollment (all 1986), HDI (1990)	GDPcap, pop growth, disarticulation, dummy for planned economies	Democracy (Bollen) in 1965 +,S Also moderates the effect of disarticulation.	Cross-sectional in 1986/90	73-82 developing countries 1986/90. Oil exporters excluded

Study	Dependent variables	Control variables	Independent variables	Statistical technique	Units of Analysis
Zweifel and Navia 2000	Infant survival	Fertility, population, % females in EAP, mean years schooling, GDPcap	Democracy (0/1, ACLP) +S	TSCS, RE with Heckman two-step correction for selection bias	138 countries observed annually 1950-1990. N=1081
Zweifel and Navia 2003	Infant survival	Fertility, population, % females in EAP, foreign aid, foreign direct investment, DPT immunization, GDPcap	Democracy (0/1, ACLP) +S	TSCS, RE with Heckman two-step correction for selection bias	188 countries observed annually 1990-1997. N=188. Missing data on indep var effectively excludes industrialized countries

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